

DEPARTMENT OF DEFENSE AUTHORIZATION FOR
APPROPRIATIONS FOR FISCAL YEAR 1996 AND
THE FUTURE YEARS DEFENSE PROGRAM

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PT. 4

Department of Defense Authorization...

HEARINGS

BEFORE THE

COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE

ONE HUNDRED FOURTH CONGRESS

FIRST SESSION

ON

S. 1026

AUTHORIZING APPROPRIATIONS FOR FISCAL YEAR 1996 FOR MILITARY
ACTIVITIES OF THE DEPARTMENT OF DEFENSE, FOR MILITARY CON-
STRUCTION, AND FOR DEFENSE ACTIVITIES OF THE DEPARTMENT OF
ENERGY, TO PRESCRIBE PERSONNEL STRENGTHS FOR SUCH FISCAL
YEAR FOR THE ARMED FORCES, AND FOR OTHER PURPOSES

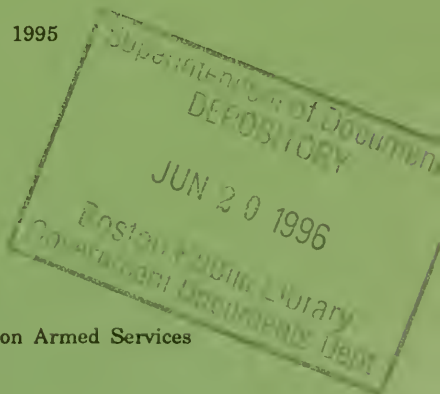
PART 4

AIRLAND FORCES

MARCH 15, 29; MAY 10, 1995



Printed for the use of the Committee on Armed Services



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DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1996 AND THE FUTURE YEARS DEFENSE PROGRAM

WEDNESDAY, MARCH 15, 1995

U.S. SENATE,
SUBCOMMITTEE ON AIRLAND FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

ARMY FORCE MODERNIZATION

The subcommittee met, pursuant to notice, at 9:30 a.m., in room SR-222, Russell Senate Office Building, Senator John Warner (chairman of the subcommittee) presiding.

Committee members present: Senators Warner, Thurmond, Coats, Exon, Levin, and Lieberman.

Committee staff members present: George W. Lauffer, deputy staff director, and Christine K. Cimko, press secretary.

Professional staff members present: Romie L. Brownlee.

Minority staff members present: Creighton Greene.

Staff assistants present: Shelley G. Lauffer.

Committee members' assistants present: Grayson F. Winterling and Judith A. Ansley, assistants to Senator Warner; Richard F. Schwab, assistant to Senator Coats; Glen E. Tait, assistant to Senator Kempthorne; Patricia L. Stolnacker, assistant to Senator Santorum; Andrew W. Johnson, assistant to Senator Exon; Richard W. Fieldhouse and David A. Lewis, assistants to Senator Levin; Suzanne M. McKenna and John P. Stevens, assistants to Senator Glenn; Lisa W. Tuite, assistant to Senator Byrd; John F. Lilley, assistant to Senator Lieberman; and George K. Johnson, assistant to Senator Hutchison.

OPENING STATEMENT BY SENATOR JOHN W. WARNER, CHAIRMAN

Senator WARNER. Good morning, everybody. I have a bit of a case of laryngitis. That is the bad news, but the good news is I will forego giving a lengthy statement as a consequence of it. [Laughter.] I will put it into the record.

Therefore, Secretary Decker, if you could proceed with your statement, I would be happy to receive it.

[The prepared statement of Senator Warner follows:]

PREPARED STATEMENT BY SENATOR JOHN WARNER

This morning, the Subcommittee on AirLand Forces convenes its first hearing of the 104th congress. This is the largest subcommittee on the Armed Services Committee. The Subcommittee itself is somewhat different from the subcommittee from which it was derived, the Subcommittee on Coalition Defense and Reinforcing Forces. The new Subcommittee on AirLand Forces, like the other subcommittees we now have has a new, shorter name, hopefully easier to use and remember. The name itself, was derived from a doctrinal concept conceived by the Army and the Air Force several years ago which is characterized by the joint use of Army and Air Forces on the battlefield and stresses agility of forces that are capable of deep maneuver forces that can "move fast and strike hard". Operation Desert Storm was the proving ground for AirLand Battle doctrine.

The subcommittee is generally responsible for the Army and the Air Force, less its strategic and airlift forces. We also have all the fixed-wing tactical aviation programs for the Air Force, Navy and the Marine Corps as well as the acquisition programs for the Army and Air Force Reserve and National Guard. The subcommittee also has oversight of European Command, Central Command, and Southern Command.

I want to welcome all members to the subcommittee—especially those who are new to the committee, Senator Inhofe and Senator Santorum.

I also want to state what a pleasure it is for me to continue to work along with my good friend, Senator Carl Levin, with whom I have worked for many years while he was the chairman of the previous subcommittee. I will try to live up to the standards for leadership which he has established.

This morning we have convened to review the Army's plans and programs for modernization. I want to welcome our witnesses this morning, Secretary Decker, the Assistant Secretary of the Army for Research, Development, and Acquisition; Lieutenant General Guenther, Director of Information Systems for C4; Major General Hite, Deputy for Systems Management; and Major General Anderson, Assistant Deputy Chief of Staff for Operations and Plans for Force Development.

We have asked you to testify this morning on the Army's overall plans for modernization and the acquisition and investment strategies for the Army's key modernization programs, including the Comanche helicopter, Advanced Field Artillery System, the Apache Longbow Attack Helicopter, the M1A2 Abrams Tank Upgrade program, the Family of Medium Tactical Vehicles, and remanufacture programs for the light, medium and heavy truck fleets.

We also have asked you to tell us how the Army plans to recapitalize its investment accounts to provide funds for modernization in the outyears.

I understand that only Secretary Decker will present a statement. Mr. Secretary, we look forward to your testimony.

STATEMENT OF HON. GILBERT F. DECKER, ASSISTANT SECRETARY FOR THE ARMY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION; ACCOMPANIED BY MAJ. GEN. RONALD V. HITE, USA, DEPUTY FOR SYSTEM MANAGEMENT AND INTERNATIONAL COOPERATION, OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION; MAJ. GEN. EDWARD G. ANDERSON, III, USA, ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS, FORCE DEVELOPMENT; AND LT. GEN. OTTO J. GUENTHER, DIRECTOR OF INFORMATION SYSTEMS FOR COMMAND, CONTROL, COMMUNICATIONS, AND COMPUTERS, OFFICE OF THE ASSISTANT SECRETARY OF THE ARMY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

Mr. DECKER. I thank you, sir. I would like very much to thank you and the other Senators of the Airland Forces Subcommittee and the staff for inviting us here today.

I would like to introduce the team members I have brought with me. Maj. Gen. Ed Anderson is in our DCSOPS. We work very closely with him on the operations side of the Army to validate requirements and priorities. We are pleased he is here.

Maj. Gen. Ron Hite who heads our Systems Directorate, integrates everything we do under the acquisition and research side of the house. General Hite, subject to confirmation by your committee, has been nominated for his third star, and we hope that he will become my principal military deputy in the near future.

Lt. Gen. Otto Guenther is the Deputy Chief of Staff, DISC 4, if you will, Information Systems for Command, Control, Communications and Computers Systems. He is dual-hatted. He reports to the Chief and the Secretary on all policy and operating matters in the Army's information and communications systems, and he reports to me on all acquisition and procurement matters. He is our expert on those fields in our acquisition structure.

Sitting behind me is Mr. George Singley who is the Deputy Assistant Secretary of the Army for all of our research and technology programs.

It is a good team and I am pleased they are here. We will do our very best to answer your questions candidly.

Senator WARNER. Secretary Decker, we will put your entire statement into the record without objection.

Mr. DECKER. Right. I appreciate that. I was going to note that. I have submitted a statement.

Senator WARNER. If you would proceed with such summarization as you think is needed.

Mr. DECKER. I have a very brief statement.

Senator WARNER. Do not try to make it too brief. Remember, this is your one chance a year to come up and state the case for a very proud organization which is in need of strong backing from the Congress.

Mr. DECKER. Thank you, sir.

Senator WARNER. Excuse me, Secretary Decker. Senator Levin, I am sorry. I did not get the word you were coming down. Please make an opening statement.

Senator LEVIN. Well, I will be brief, Mr. Chairman. You and I have been working together a long time on issues, and we have always worked together very well. I look forward to this year. This is a very important first hearing for the subcommittee that you chair, and I would just join you in welcoming our witnesses.

There are a lot of critical issues that are on the radar screen for this subcommittee, and there is none that is more critical than modernization—it really amounts to future readiness. There is a lot of focus on readiness these days and it is the right focus, but we have got to keep our eye really on a couple of balls in the readiness area. That includes today's readiness, but also what readiness is going to look like down the road. That is what this hearing really is all about. Again, I want to tell you how much I look forward to working with you again and keeping up an old relationship.

Senator WARNER. Well, I thank you, Senator. Indeed, the Senator and I came to this institution in the same year, so we are classmates. And we have worked together on subcommittees, and we just sort of very conveniently shift seats now and then, one chair, one ranking. I think I am going to keep mine for the unforeseeable period.

Senator LEVIN. No comment. [Laughter.]

He is the Chair.

Senator WARNER. So, please proceed Mr. Decker.

Mr. DECKER. Nice to see you again, Senator Levin. I appreciate you joining us. I will make a brief statement and then we will be subject to your questions, and we will try to provide you the most candid answers we have.

Today our Army is the premier land force in the world. Today we have the finest soldiers equipped with the best warfighting equipment in the world, and there is a lot of life left in many of our platforms. They were way out ahead when first fielded and they still are. So, our first and foremost strategy is to leverage previous investments through technology insertion, and we believe we are having great success with this approach.

Some principal examples are the M1A2 tank upgrade and the M2-A3 Bradley upgrade. The Apache helicopter Longbow fire control upgrade, along with the Longbow Hellfire missile. The Patriot Advanced Capability-3 upgrade with a hit-to-kill missile for a much stronger theater missile defense capability. The Paladin 155 millimeter howitzer upgrade. The Breacher combat vehicle upgrade, and the Improved Recovery Vehicle upgrade. These are but a few, but what we think are outstanding examples of how technology insertion and upgrades really work for the Army. However, because we have critically restrained resources, the Army has had to balance readiness, quality of life, and modernization.

Now, as you have heard from Dr. Perry in prior testimony and in his speeches, we sort of have a 2-year modernization pause. This is because the Secretary of Defense and the entire tri-service leadership is committed to readiness and quality of life for our soldiers, sailors, airmen, and marines during our drawdown to the stable force, and drawdowns always create significant periods of instability and you have to accommodate those. So, Dr. Perry and the military leadership have opted to make sure we do everything we can to keep morale and readiness up during this turbulent period.

During this period, it creates a severe problem in trying to prioritize an already thin modernization budget for the Army. During our prioritization in the preparation for the 1996 budget and the future year defense plan associated with it, we have had to make some tough choices. Among them are, relative to prior years, a reduction in our RDT&E programs, and reduction in our tactical wheeled vehicle program, reduction in our ammunition program where we have a severe mix problem, reduction in our tank program, reduction in our sustaining base automation information systems programs and reduction in a larger than desired list of smaller, critical projects. We were also directed by OSD to delay production in fielding beyond the 6-year FYDP period of the Comanche armed reconnaissance helicopter, the Army's number one priority.

The result is that this year's budget, meaning fiscal year 1996, request continues to fund a limited, but critical number of new systems that complement our technology insertion programs. They are Comanche, the Advanced Field Artillery System (AFAS), now called the Crusader, the Javelin fire and forget anti-tank missile infantry-based weapon, the sense and destroy armor system, the 155 millimeter version that can destroy armor and vehicles at distant ranges, the All Source Analysis System (ASAS), Block II upgrade which is critical to winning the information war and to our

targeting efforts, and the ATACMS-BAT, Brilliant Anti-armor Submunitions program.

How do we pull this off? We must and are trying to stick to the following strategy: an efficient tech-based program used in conjunction with acquisition reform to enable us to acquire as much as we possibly can from the broad industrial base of the country, not just the specialized defense base. Dual use must be made a reality and not just a good idea, implementing a horizontal technology integration program for digitization and technical architecture where a new technology is inserted commonly across several systems. An example is the Army's second generation FLIR, which is going into multiple systems across the battlefield. Digitization itself has as its total foundation information and communications technology and our S&T programs are heavily prioritized in those areas.

We must continue acquisition reform with a vengeance and realize a great portion of the 20 to 30 percent savings that numerous studies show us is possible with streamlined acquisition and aggressive management. And we must, after the modernization pause, plow back the out-year savings, and we believe they will materialize, just as Dr. Perry proposed in his February 10 testimony to the Senate Budget Committee.

It is a tough environment and we clearly understand and appreciate the horrendous problems that you, our elected representatives, are faced with in balancing the fiscal and monetary equation. At the same time, we cannot let our forces fall too far and we cannot pause our modernization for too long. My bottom line is that today's modernization programs are tomorrow's readiness.

I thank you for your attention, sir, and we await your questions. [The prepared statement of Mr. Decker follows:]

PREPARED STATEMENT BY HON. GILBERT F. DECKER, ASSISTANT SECRETARY OF THE ARMY FOR RESEARCH, DEVELOPMENT, AND ACQUISITION

INTRODUCTION

Mr. Chairman and members of the committee, thank you for the opportunity to appear before you to discuss the proposed fiscal year 1996 research, development and acquisition (RDA) budget for the United States Army. It is a privilege for me to represent the Army leadership, the civilian and military members of the Army acquisition work force, and the soldiers who rely on us to provide them with world-class weapons and support equipment to deter conflict or to fight and win our Nation's wars decisively with minimum casualties.

Today's Army is the premier land force in the world. We take great pride in knowing that our soldiers have the most technologically advanced warfighting systems. This would not have been possible without the help and support from members of this committee. As representatives of the American people, you have strongly supported our programs and guided them to fruition. I believe the Army has been a good steward of the resources provided, but our success would not have been possible without your advice and support.

It is imperative that we sustain modernization. If not, our technological advantage over potential adversaries will diminish over time and increase the risk to our soldiers. We cannot let this happen as we change today's Army into a 21st century Army—Force XXI. Continuous modernization is one of the keys to dominance on the future battlefield and the key to readiness for unexpected challenges of the 21st century.

We have made very tough choices because of our declining budget. In order to retain the most significant capabilities, the Army reduced many procurement programs and terminated others. In fiscal year 1996, our RDA budget request totals \$10.69 billion. Our procurement request is \$6.25 billion, 16.2 percent of the Department of Defense (DOD) procurement budget request of \$38.66 billion and 10.5 percent of the Army's total budget request of \$59.5 billion. In fiscal year 1996, our Re-

search, Development, Test and Evaluation (RDT&E) request of \$4.44 billion totals 12.9 percent of DOD's RDT&E budget request of \$34.33 billion and about 7 percent of the Army's total budget request.

Our RDT&E budgets have not suffered the same level of declines as our procurement accounts; nonetheless, they have declined. While our critical modernization programs are supported by the fiscal year 1996 request, we are seriously concerned about long-term modernization. The Army Chief of Staff, General Gordon Sullivan, has stated that our soldiers dominate the battlefield today with weapons that were conceived, in some cases, before they were born. He said, "The trained and ready Army we have today is the fruit of two decades of investment by the citizens of this Nation." After a decade of decline, our modernization accounts are approaching the minimum.

Readiness is our number one priority, but we must not overlook the fact that a stable investment in modernization will ensure the long-term readiness of the force. Without question, today's modernization program is tomorrow's readiness. The delicate balance between the demands of readiness today and the need to invest in the future has been maintained in the past, but as we complete downsizing and restructuring the force, modernization programs are absolutely essential. Our actions this year and the next will influence the readiness of the force for the next 10 to 20 years.

MODERNIZATION VISION

The world today is complex and ever-changing. The Army missions and responsibilities continue to grow, and include worldwide disaster and humanitarian relief, peacekeeping and counterdrug operations as well as training and equipping for combat. Numerous danger zones present us with new challenges. Our smaller Army must be more versatile, deployable to more locations, sustainable in a variety of environments, and just as mission-capable as in the past.

The Army modernization strategy includes extending the lives, improving the performance, and adding new capabilities to our existing systems. We have modernization programs underway for the Abrams tank; Bradley Fighting Vehicle; Apache attack helicopter; Black Hawk medium lift helicopter; Patriot air defense system; Stinger air defense missile; Multiple Launch Rocket System; Tactical Wheeled Vehicles, and conventional ammunition. The rate of improvement versus cost in firepower, mobility, and protection upgrades has leveled out and investments with the largest near-term payoffs will come from the integration of information technologies to improve these existing systems. In the long-term, we are focusing technology advances in key new developments—the RAH-66 Comanche armed reconnaissance helicopter and Crusader, formerly known as the Advanced Field Artillery System/Future Armored Resupply Vehicle.

THE ARMY MODERNIZATION PLAN

In these changing and highly uncertain times, we have a plan to modernize America's Army and take it into the 21st century. Our blueprint for meeting the challenges of the post-Cold War world details a continuous modernization strategy that maintains the capabilities necessary to protect our Nation's interests and to achieve land force dominance over potential adversaries. The Army modernization plan is a living, working document.

The smaller our Army becomes, the more modern and technologically overmatching it must be. If we do not dominate our enemies in the future as we do now, we may still win—but at the price of far more American casualties, and with the risk of a far longer campaign that will burden our resources and our citizens. The Army modernization strategy recognizes the unpredictability of the where and when of two nearly simultaneous major regional conflicts and the fact that most of our forces will be stationed in the continental United States (CONUS). Therefore, we place priority on five objectives of technological superiority where the Army must maintain its technological edge. These five objectives are: *Project and Sustain the Force*; *Protect the Force*; *Win the Information War*; *Conduct Precision Strike*; and *Dominate the Maneuver Battle*. Let me briefly explain their importance.

Project and Sustain the Force. Although we have a global mission, the Army is now largely CONUS-based. When called upon, we must project our power into trouble spots where our forces can expect to be the first troops on the ground. The capability to deploy highly lethal combat forces rapidly and sustain them from bases both here at home and from our remaining bases overseas is fundamental to our success in any mission. To create these power projection bases, we must upgrade our rail and air deployment and information infrastructure to facilitate split-based operations. We fully support the airlift and sealift programs of our sister services,

while we work to preposition supplies and equipment, both ashore and afloat, in key areas throughout the world. We cannot preposition supplies and equipment in every potential trouble spot; therefore we are also increasing the combat capability of our earliest deploying light forces in order to get more lethal forces to areas of conflict more quickly.

Protect the Force. Protecting our soldiers has always been important to us, but the lethality of modern weaponry and the availability of long-range rockets, missiles, and cruise missiles to even unsophisticated threats causes us to reemphasize the protection of our forces. We need air defense, particularly defense against theater ballistic missiles, cruise missiles, and unmanned aerial vehicles (UAVs). Effective, long-range missile defense is required to protect critical bases, ports, maneuver forces, and political targets/population centers from weapons of mass destruction. Realizing there is no 100 percent effective defense, we must maintain the capability for our soldiers to operate protected in a chemical or biological warfare environment. Finally, passive and nonpassive combat identification is essential to reduce fratricide and protect our soldiers from friendly fires.

Win the Information War. Information is power. On the battlefield, information is deadly power. A key factor in modern warfare is the ability to collect, process, disseminate, and use information about the enemy while preventing him from obtaining similar information about our forces. In short, we must destroy, disrupt, and control enemy information sources and distribution while ensuring our commanders get accurate and relevant data in time to use it. Equipping our battlefield systems to transmit, receive, and display digital data, is fundamental to winning the information war.

Conduct Precision Strikes. In order to conduct synchronized, decisive operations, the Army must strike and destroy enemy forces throughout the battlefield—in close in support of the maneuver battle, laterally to our flanks, and deep in front of friendly lines. To accomplish this, the Army must have modern artillery, attack helicopters, missile systems with adequate range and firepower, effective munitions, and superb Reconnaissance, Surveillance, and Target Acquisition systems among which are included reconnaissance helicopters and a family of modern UAVs. The munitions suite must include munitions that defeat fixed targets and moving vehicles as well as munitions that can engage and destroy high priority, short dwell targets such as tactical missile launchers and enemy air defenses. Against moving enemy maneuver formations, the Army must concentrate and coordinate indirect fires along with massed helicopter attacks.

Dominate the Maneuver Battle. Decisive operations require controlling vital land areas and the destruction of the enemy's land combat capability. The Army must always maintain a substantially overmatching capability in maneuver forces. It is in the maneuver battle that the risk to our soldiers is highest. Advanced weapon systems and technology will continue to proliferate around the world. To ensure swift, decisive victory with minimum casualties, the Army combined arms team must be able to outthink, outmaneuver, and outshoot its adversaries day or night, in any weather.

Project and Sustain the Force

Following are descriptions of systems and systems upgrades in development or in procurement that will help to ensure that we *Project and Sustain the Force*.

Sustaining the power projection Army throughout the length of the mission will be enhanced by initiatives such as the Army's Total Distribution Program, which is designed to track the location and control the distribution of material within a theater of operations. Using primarily off-the-shelf commercial capabilities, this system will give us asset visibility throughout the force and its support system.

To support our forces, fiscal year 1996 procurement programs focus on improving the Army's tactical transportation and distribution capability by continuing the Black Hawk utility helicopter and the High Mobility Multipurpose Wheeled Vehicle (HMMWV).

Procurement of the UH-60 Black Hawk will continue in fiscal year 1996 with delivery of the last 60 aircraft of a 5-year multi-year contract that will bring the Army's fleet to 1,450. The Black Hawk has been combat tested—Grenada, Panama, and Southwest Asia—and its extraordinary capabilities are well-known.

Tactical Wheeled Vehicles (TWV) are a critical element of the Army's operational effectiveness. Today's modern, mobile Army doesn't run on its stomach; it runs on its trucks. Our very tight budget constraints forced tough decisions on our TWV programs. Among our most important TWV programs is the Family of Medium Tactical Vehicles (FMTV). Its budget request totals \$39.7 million in fiscal year 1996 for a contract cancellation and ongoing program management costs. The Army will not

fully fund the final year of the current production contract. The program should complete Initial Operational Test and Evaluation (IOT&E) next June after correcting reliability/durability problems found in earlier testing, and continue production of contracted for vehicles using prior year funding. A family of diesel powered trucks in the 2½-ton and 5-ton payload capacity, built on a common chassis, FMTV will perform line haul, local haul, unit mobility, unit resupply and other missions in combat, combat support, and combat service support units. What you do not see in the budget submission is our 2½-ton truck Extended Service Program (ESP). We have an ongoing, multi-year contract that funds this program from the National Guard and Reserve Equipment account. Through ESP, we take our old 2½-ton trucks, remanufacture them, and add state-of-the-art components. The improved vehicles meet current safety and emission standards and have improved mobility, reliability, and operability. After remanufacture and technology insertion, these vehicles are fielded to the Reserve components. HMMWV, a Tri-service program, is a diesel-powered, four-wheel drive tactical vehicle. In fiscal year 1996, the Army will purchase a HMMWV up-armored scout variant and a heavy variant. Fiscal year 1996 procurement dollars total \$58 million and will buy 400 HMMWVs.

In previous years, we made very painful decisions regarding our combat service support area. Several programs were decremented to pay higher priority bills. The Army fights a "dirty" war. We need generators, protective masks, trucks and similar equipment. We have got to bite the bullet and fund these programs at a minimally acceptable level, which we have attempted to do in our fiscal year 1996 budget request.

Protect the Force

Following are descriptions of systems and systems upgrades now in development or in procurement that will help to ensure that we *Protect the Force*.

In the low altitude air defense area, the Stinger procurement request for fiscal year 1996 will provide for continued retrofit of this missile to the Block I configuration. This improvement will extend its life and help overcome some of the inherent deficiencies of the currently fielded Stinger, until the Army can move forward with Stinger Block II. The Stinger RDT&E funds will provide continued, essential phased improvements to the software. In fiscal year 1996, the Avenger procurement funds will buy trainers and will support delivery and fielding of prior year buys.

The Theater High Altitude Area Defense (THAAD) system is being designed to negate theater ballistic missiles at high altitude and long-ranges to expand battlespace and defeat missile threats directed against military forces, critical and strategic assets such as population centers and industrial resources. THAAD is deployed at Echelons Above Corps (EAC) and will free the lower tier (i.e., Patriot PAC-3 and/or Corps Surface-to-Air Missile (Corps SAM), now known as the Medium Extended Air Defense System (MEADS)) to concentrate on air breathing threats and to protect high value assets against missiles that leak through the upper tier. Plans in fiscal year 1996 for THAAD include completion of the Demonstration and Validation (DEM/VAL) flight and system tests, completion of DEM/VAL lethality testing, completion of the objective system design review, and preparation for Milestone II.

The Theater Missile Defense-Ground Based Radar (TMD-GBR) is the primary sensor for THAAD. It provides wide-area surveillance and fire control support to the THAAD system and also cueing support to lower tier systems. TMD-GBR uses state-of-the-art radar technology to accomplish its required functions of threat attack early warning, threat type classification, interceptor fire control, external sensor cueing, and launch and impact point estimation. Plans in fiscal year 1996 include delivery of two User Operational Evaluation System radars and their use in THAAD system flight testing. First Unit Equipped (FUE) for THAAD with TMD-GBR is fiscal year 2002, although an Early Operational Capability (EOC) will be available in fiscal year 1997. THAAD and TMD-GBR are funded by the Ballistic Missile Defense Organization (BMDO) and managed by the Army.

The Patriot Missile System has been fielded to U.S. forces and is deployed in CONUS, Europe, Southwest Asia, and South Korea. Only the Patriot Advanced Capability-Level 2 (PAC-2) is being produced for U.S. forces. Proven in combat, PAC-2 remains the only fielded capability our country has to defend against tactical ballistic missiles. In fiscal year 1996, the Army continues fielding the Patriot Guidance Enhanced Missile, funded and procured by BMDO, to improve our interim capabilities until we field the Patriot PAC-3 system in fiscal year 1998.

Patriot Advanced Capability-3 (PAC-3) is a total system performance improvement of the Patriot PAC-2. The PAC-3 upgrade includes improved ground equipment and a new missile designed to counter the evolving and more stressing theater ballistic missile and air breathing threats with much greater lethality and range

than PAC-2. DOD affirmed the Army and BMDO selection of the Extended Range Interceptor as the PAC-3 missile, primarily because of its lethality against existing and near-term theater ballistic missiles with warheads of mass destruction. The PAC-3 missile is a hit-to-kill missile that destroys incoming theater ballistic missiles and air breathing targets through body to body impact. The program is funded jointly by the Army and BMDO. PAC-3 entered Engineering and Manufacturing Development (EMD) in October 1994. We will begin EMD flight testing of the PAC-3 missile in fiscal year 1996. Low Rate Initial Production (LRIP) will start in fiscal year 1997 and FUE is planned for fiscal year 1998.

MEADS (Medium Extended Air Defense System), formerly the Corps SAM system, will defend the ground maneuver forces against multiple and simultaneous attacks by short-range ballistic missiles, low radar cross-section cruise missiles, and other air-breathing threats to the force. It will be designed to provide immediate deployment for early entry operations with as few as six C-141 sorties; be mobile to move rapidly and protect maneuver force assets during defense operations; use a distributed architecture and modular components to increase survivability and flexibility of employment in a number of operational configurations; and provide a significant increase in firepower while greatly reducing manpower and logistics requirements. Given these characteristics, MEADS can rapidly respond to a variety of crisis situations and satisfy the needs of the joint, Operational, and tactical commanders.

Significant effort has been made to share the cost burden of this program with our allies. The Deputy Secretary of Defense recently signed a Statement of Intent with the Governments of Germany, France, and Italy to cooperatively develop and produce MEADS to satisfy the Corps SAM operational requirements for these nations. This cooperation is based on the United States providing 50 percent of the funding and receiving 50 percent of the work for our industry.

In early March, the Army released a Request for Proposal (RFP) to the major U.S. contractors that will provide system proposals. The Army will select two teams later this year to proceed into the International Teaming and Project DEM/VAL phase of the program during which the concept will be finalized for full development and production. In the long-term, this program will provide a high potential to recoup more investment through Foreign Military Sales to the 20-plus nations that currently own HAWK. FUE is projected for fiscal year 2005.

In January, the Army's anti-fratricide system, the Battlefield Combat Identification System (BCIS), successfully completed its first platform integration test on the Bradley and HMMWV. Developed as a result of friendly fire casualties during Operation Desert Storm, BCIS during fiscal year 1996 will complete the Limited User Test and prepare for Task Force XXI, an Advanced Warfighting Experiment (AWE) to determine doctrine for Force XXI. At Task Force XXI, BCIS will be tested as a stand alone system and as an input to the situational awareness of heavy forces to determine its value on the digital battlefield. BCIS is a millimeter wave, ground-to-ground, point of engagement system that provides through the sight, day/night, all weather positive identification of BCIS-equipped U.S., allied, and coalition platforms. Shooters query potential targets at ranges that can extend beyond 5 kilometers. Friendly platforms targeted by friendly shooters generate automatic electronic responses in less than a second. BCIS is resistant to electronic countermeasures, active exploitation, and deception.

In fiscal year 1996, pursuant to fiscal year 1995 congressional direction, the Office of the Secretary of Defense (OSD) will continue to establish a Joint Chemical Biological Defense Program. The Army, as executive agent of the program, has aggressively developed a management structure that will serve to coordinate and integrate service RDA in this critical area. Service participation in this process has been enthusiastic and highly constructive. This joint management structure is developing a joint program that will eliminate duplicity and provide the total force with improved chemical and biological protection in the future.

Win the Information War

Following are descriptions of systems and systems upgrades in development or in procurement that will help to ensure that we *Win the Information War*.

The Army's primary development system to ensure that our soldiers have the information advantage in the Information Age is the RAH-66 Comanche armed reconnaissance helicopter, currently in DEM/VAL. In early fiscal year 1996, we will conduct Comanche's first flight, ground and static tests, and continue Mission Equipment Package development and integration. Comanche has the potential to make a major contribution to winning the information war, but let me hasten to add that the Comanche may be able to make significant contributions to the other four mod-

ernization objectives as well. During Operation Desert Storm, our ground commanders never got the near real-time battlefield information they needed to make the best tactical, timely decisions on the employment of battlefield forces. Comanche, if fielded, along with Joint STARS and UAVs, will help correct this most critical deficiency with greatly improved night/adverse weather reconnaissance and target acquisition, deep reconnaissance without detection, survivability, and deployability.

Let me briefly list the capabilities of this revolutionary helicopter under the remaining modernization objectives. (1) The Comanche's capabilities in extended range operations, low observability, target recognition, digitized communications as well as its ability to quickly respond to a "mission divert" makes it a superior vehicle for deep "precision strike" missions against time sensitive targets—especially targets so dangerous they must be confirmed killed or reengaged. (2) Comanche provides strategic agility to "project and sustain" (rapid inter/intra-theater deployability) with technical superiority that gives the maneuver commander a decisive force on the battlefield worldwide. Its self-deployment range of 1,260 nautical miles is sufficient to self-deploy from CONUS to Europe, Africa, and the Middle East, and it will require significantly less maintenance support than today's helicopters. (3) Comanche will "dominate maneuver" in its cavalry role by quality armed reconnaissance, developing the situation, providing security, maneuvering rapidly across the battlefield to the critical places and synchronizing other scout reconnaissance assets and weapon systems on the digitized battlefield. Designed for rapid rearm, refuel, and repair, the Comanche will increase the operational tempo. (4) The Comanche will reduce the potential for fratricide and "protect the force" through its advanced electro-optical sensors, aided target recognition and sensor/weapons integration. Its night/adverse weather air defense capabilities are unmatched as is its capability to conduct armed reconnaissance and provide early warnings in all conditions to include day/night/adverse weather. It is clear that Comanche is tailor-made for the new world order: EOC unit fielding is scheduled for fiscal year 2002 with six aircraft.

The Army Battle Command System (ABCS) is essential to realizing the Joint interoperability goal of the Command, Control, Communications, Computers, and Intelligence (C4I) for the Warrior concept. Procurement of common hardware and control nodes for ABCS continues in fiscal year 1996. Under the ABCS umbrella, R&D continues on the evolutionary acquisition of the Army Tactical Command and Control System (ATCCS) which is key to providing commanders in the Army's corps and divisions data to synchronize and direct their forces more effectively.

The ATCCS consists of interoperable automation systems supporting the five Battlefield Functional Areas (BFAs): Maneuver Control System (MCS) supporting the Maneuver BFA; Advanced Field Artillery Tactical Data System (AFATDS) supporting Fire Support; Forward Area Air Defense Command and Control (FAADC2) supporting Air Defense; All Source Analysis System (ASAS) supporting Intelligence/Electronic Warfare; and Combat Service Support Control System (CSSCS) supporting the Combat Service Support BFA. These systems assist the force commanders in processing information within the BFAs, planning and controlling operations, and exchanging information horizontally across the BFAs and vertically from battalion to EAC. ASAS, for example, provides commanders direct access to strategic and joint intelligence. The ASAS program will continue to leverage its R&D activities in 1996 by infusing already fielded Block I systems with technology and functional upgrades flowing from the ASAS Block II development contract. The ASAS program will also issue ASAS-Extended—an affordable, limited capability consisting of proven, ASAS software on non-developmental hardware—to units, such as the 25th Infantry Division and three Armored Cavalry Regiments, which were not fielded one of the 12 Block I systems.

AFATDS, the automated fire support command, control and communications system will be the first totally automated fire support system and will be interoperable with existing Tactical Fire Control (TACFIRE) and field artillery systems, the Airborne Target Handover System/Improved Data Module, other ABCS nodes, and selected allied fire support systems.

CSSCS just completed IOT&E in the fourth quarter of fiscal year 1994. The IOT&E identified some deficiencies with CSSCS version 3 software, primarily in the commander and staff training and system administration area, but the test was generally successful. Besides follow-on testing in the first quarter of fiscal year 1996 (to verify that IOT&E deficiencies were corrected), the Army plans to procure a limited number (58) Common Hardware Software-2 (CHS-2) systems to demonstrate a successful transition from CHS-1 and to support Task Force XXI.

The AFATDS is scheduled for a Milestone III production approval decision in fiscal year 1996, the MCS will conduct a Limited User Test, and the CSSCS will conduct a Follow-on Operational Test and Evaluation (FOT&E).

All ATCCS systems will be provided to the 2D Armored Division (2AD), designated as the Experimental Force (EXFOR) for Task Force XXI. In support of the lower echelon command and control and digitization of the battlefield, the Force XXI Battle Command Brigade and Below (FBCB2) Appliqué Program will equip and train a brigade size force during fiscal year 1997 for the AWE entitled Brigade Task Force XXI. Appliqué sets are being acquired for field exercises to provide command and control capabilities to platforms that either have no embedded command and control capabilities or where existing capabilities are inadequate to meet users needs.

The Army has adopted a technical architecture with open standards that will enable complete interoperability across all platforms on the battlefield. The Army is the first service to do so. Our technical architecture is based on widely accepted commercial standards and the Defense Information Systems Agency's Technical Architecture for Information Management, and is composed of four elements: Information Processing, Data Transport, and Information Standards, as well as a Human-Computer Interface framework. This architecture is applicable to all strategic, tactical, and sustaining base information, communications, and embedded C4I systems. By implementing these well-defined, widely-known, and consensus-based standards, the Army can leverage marketplace investments and assure a migration path into the future.

The Command and Control Vehicle (C2V) program will complete prototype vehicle design and fabrication in preparation for operational and technical testing in fiscal year 1996. FUE is planned for fiscal year 1999. The need for the C2V was confirmed during Operation Desert Storm when the lack of a survivable command post vehicle capable of keeping pace with the Abrams tanks and Bradley Fighting Vehicles was identified as a critical operational deficiency. The C2V will be a fully tracked, lightly armored vehicle that will ensure a mobile, responsive, and survivable command and control capability for armored forces. The C2V is a battalion-through-corps level command and control platform which supports operations on the move and integrates the ABCS components.

In support of higher level command and control, the Army Global Command and Control System (AGCCS) will migrate from the current Worldwide Military Command and Control System support infrastructures to the AGCCS single Common Operating Environment (COE). Each of the ATCCS/ABCS tactical command and control systems will continue development and implementation of the COE software into their systems.

The CONUS-based power projection Army has become more dependent on Military Satellite Communications to assure critical information data flow to our deployed forces anywhere in the world. To this end, procurement of the Enhanced Manpack UHF Terminal (EMUT) continues in fiscal year 1996 and fielding will begin in January 1996. The EMUT will provide Demand Assigned Multiple Access (DAMA), secure tactical UHF satellite communications to corps and divisions to support early entry operations for joint forces. The need for this capability was determined to be critical in Operation Desert Storm. The Army is the joint agent for procuring EMUTs for all services' requirements to meet the joint staff mandate to have joint interoperability in DAMA and digital secure voice communications after fiscal year 1996.

As DOD executive agent for all satellite communications ground equipment, the Army continues in fiscal year 1996 its program to modernize and sustain the current \$3 billion ground system infrastructure for the Defense Satellite Communications System (DSCS). The fiscal year 1996 R&D funds will continue work on the replacement satellite configuration control equipment and the high data rate universal modem development, and complete the limited development of training simulators for the Signal School at Fort Gordon, Georgia. DSCS provides critical information transfer to our deployed warfighters, as well as high data rate secure information transfer in support of intelligence operations, electronic warfare, and smart weapons. As the Military-Strategic/Tactical Relay (MILSTAR) comes on line (to support a Commander in Chief (CINC) and his Division warfighters), the DSCS future mission will be the information super highway between the sustaining base (CONS) and the deployed warfighter at EAC.

The MILSTAR system remains one of our most critical command and control programs. The Air Force launched the MILSTAR I Development Flight Satellite No. 1 in February 1994 and continues to develop the MILSTAR II satellite that will be an essential element of the Army's assured communications connectivity to our deployed warfighters. The Army's MILSTAR terminal program has entered EMD. We will begin procurement of more than 300 low data rate terminals next spring. MILSTAR will provide a worldwide, secure, jam-resistant communications capability that is urgently needed to prosecute warfighting missions horizontally and vertically

at corps and division levels and for special users. The Army's medium data rate terminal program is in phase with the first launch of the MILSTAR II satellite, which is scheduled for fiscal year 1999. The Army's power projection force will depend on space communications as the cornerstone of the C4I strategy for the warrior.

A key element of any digitization architecture is reliable and secure digital data links between fighting systems and commanders. The combat proven Single Channel Ground and Airborne Radio System (SINCGARS) with both voice and data channels, is an important link in any digitization scheme.

Conduct Precision Strikes

Following are descriptions of systems and systems upgrades in development or in procurement that are key to *Conduct Precision Strikes*.

Crusader, formerly the Advanced Field Artillery System (AFAS) and the Future Armored Resupply Vehicle (FARV), is the Army's top priority, next generation ground combat system, providing leap-ahead indirect fire cannon and artillery resupply systems for armored forces. Last November, Crusader was approved to enter into DEM/VAL. Crusader will provide improved capabilities in range, rate-of-fire, time-on-target, accuracy, survivability, mobility, and ammunition handling speed with reduced manpower and logistics burdens. Crusader will use the world's first liquid propellant gun and is the "technology carrier" for other future armored systems—employing robotics advanced fire control computing techniques, self-protection features, and signature control. FUE is scheduled for fiscal year 2005.

In fiscal year 1996, the Army Tactical Missile System (ATACMS) Block IA, the extended range version of the combat proven ATACMS Block I, will complete pre-production test and initiate the first year of LRIP. The 6th and final year of full rate ATACMS Block I production will occur in fiscal year 1996. ATACMS Block IA prototype missiles recently participated in an Advanced Technology Demonstration as part of the Joint Precision Strike Demonstration and in a Navy Advanced Technology Demonstration that launched the missile from an Army Multiple Launch Rocket System (MLRS) off the deck of a Navy ship. Both of these tests were highly successful and met all planned objectives.

In May 1995, an Army In-Process Review will consider approval for the continued development of the ATACMS Block II program. ATACMS Block II will provide the means to attack and destroy moving and stationary threat targets at long-ranges with high precision. In combat, the system delays and disrupts enemy forces in the deep battle, thereby interrupting threat force planning for operations in the close battle area. The standard M270 MLRS launches the ATACMS Block II. During fiscal year 1996, ATACMS Block II development continues with the conduct of static tests and integration activities associated with the Brilliant Anti-Armor Submunition (BAT).

Continuing in EMD in fiscal year 1996, the BAT, a self-guided submunition, uses both acoustic and infrared seekers to locate and attack moving armored combat vehicles without human interaction. BAT submunitions, carried deep into enemy territory by ATACMS Block II missiles are dispensed over areas of high-payoff targets to autonomously detect, attack, and destroy individual targets. The FUE date for ATACMS Block II with BAT is fiscal year 2001.

The BAT Pre-Planned Product Improvement (P3I) DEM/VAL continues in fiscal year 1996 with the Phase II contract award last December. The BAT P3I, through seeker and warhead improvements, adds cold sitting armor, heavy multiple launch rocket systems, and surface-to-surface missile Transported Erector Launchers to the BAT target set. ATACMS Block II and IIA are the delivery vehicles for BAT P3I. The extended range ATACMS Block IIA missile begins development in fiscal year 1998.

After successful completion of performance and contractor verification tests, Sense and Destroy Armor (SADARM) will enter LRIP in fiscal year 1995 and continue in fiscal year 1996. SADARM is a fire-and-forget, sensor-fuzed submunition designed to detect and destroy lightly armored vehicles, primarily self-propelled artillery. It is scheduled for fielding in fiscal year 1999.

The Extended Range MLRS (ER-MLRS) continues in development. MLRS performed spectacularly during Operation Desert Storm, but commanders concluded that the system would be even more effective if the range could be increased from the current 32 kilometers up to 50 kilometers. The development program includes the addition of a low-level wind measuring device on the M270 launcher to enhance accuracy and effectiveness, and incorporation of a self-destruct fuze on the submunitions to increase safety for friendly maneuver forces. The program is on schedule with no technical difficulties. In fiscal year 1996, we will continue development, including completing ballistic flight testing and conducting Pre-Production

Qualification Testing. ER-MLRS will enter production in fiscal year 1997 with FUE scheduled in fiscal year 1999.

The Army is also continuing development of the MLRS Improved Launcher Mechanical System (ILMS) and Improved Fire Control System (IFCS) in fiscal year 1996. These modifications have been linked to provide a one time major modification to all MLRS launchers starting in fiscal year 1996. These modifications include an embedded Global Positioning System, growth potential for MLRS Family of Munitions, increased digital performance, correct part obsolescence, reduced operation costs, improved launcher load module drive system, and increased survivability.

The Joint STARS Ground Station Module (GSM) is funded in fiscal year 1996 to begin full production and to initiate a P3I program that evolves the GSM into the Common Ground Station. The Joint STARS aircraft and radar systems are managed by the Air Force. Joint STARS collects near real-time radar imagery deep into the enemy rear for targeting and intelligence dissemination. With a GSM at maneuver and fire support Headquarters, Joint STARS reduces the sensor to shooter timelines increasing the speed with which rapidly moving, high payoff targets can be attacked.

With the fiscal year 1996 buy of the Paladin upgraded howitzer M109A6, we complete its multi-year procurement allowing us to provide Paladins to all cannon artillery battalions in the 10 Division Force and also to begin fielding Paladin to the National Guard. The Paladin overcomes many operational limitations and outdated technology of the current M109 howitzer and provides longer-range fires and substantially improved survivability through "shoot and scoot" techniques. The Paladin program has become a true representation of government and industry cooperation.

Army forces require modern munitions and the assurance that munitions expended in a conflict can be replenished in a timely manner. Army forces also require a steady supply of training ammunition to ensure that soldiers are constantly ready to answer when called on to support our Nation. The fiscal year 1996 request fully resources the Army's requirements for training ammunition and continues a build-up of modern munitions.

This Nation requires a viable munitions industrial base to ensure ammunition supplies in peacetime and the capability to reconstitute ammunition stocks after a conflict. This industrial base is difficult to maintain in today's peacetime, resource constrained environment. The Army continues to work with industry to develop affordable courses of action that provide for future needs.

The Army also requires an efficient munitions logistics base to support operations in peace and war. The fiscal year 1996 request contains resources to support a robust demilitarization program in support of rationalizing the logistics base.

Dominate the Maneuver Battle

Following are descriptions of systems and systems upgrades in development or in procurement that will help to ensure that we *Dominate the Maneuver Battle*.

The Army is pursuing a technology insertion approach to modernization by integrating digital and advanced infrared sensors into Abrams tanks and Bradley Fighting Vehicles and modifying the AH-64 Apache helicopter to the Longbow configuration with a leap-ahead day/night/adverse weather target acquisition radar, fire and forget Hellfire missiles, and advanced digital processors and communications. These upgrades are all compatible and will allow these systems to exchange friendly and enemy position data directly from video display to video display. In addition, all can link with scout helicopters and artillery fire direction centers, and transmit data directly to C2V and to ABCS components. This powerful linkage of combat systems allows the commander to provide a common view of the battle to all elements, speeds-up the tempo of maneuver, and reduces the potential for fratricide. It allows us to "dominate the maneuver battle" by dominating the information battle.

The Javelin provides our soldiers a man-portable, highly lethal system against any known conventional or reactive armor threat. It features fire-and-forget technology with a maximum range of 2,000 meters in adverse weather, day or night, and weighs less than 50 pounds. The Army, in cooperation with its Joint Venture partners (Texas Instruments/Martin Marietta), has initiated an aggressive cost reduction program that will significantly reduce the total cost of the Javelin program by an estimated \$1.4 billion. Savings will be achieved by reducing Javelin production from 14 to 11 years, taking the savings, and reinvesting them into the program. Fiscal year 1996 production will be the 3rd year of LRIP prior to proceeding to full rate production in fiscal year 1997.

LRIP of the Armored Gun System (AGS), the replacement for the M551A1 Sheridan, is planned for fiscal year 1996. AGS will complete early user operational testing in fiscal year 1995 and we expect to enter IOT&E and Live Fire Testing in fiscal

year 1996 to support a full rate production decision in fiscal year 1997. AGS is a very high priority because it will provide a rapidly transportable, air droppable, protected, large caliber, direct fire system for the light forces. It is important that we keep this program on track.

The Improved Target Acquisition System (ITAS) for the TOW (Tube-Launched, Optically-Tracked, Wire-Guided) missile completes development in fiscal year 1996 and enters LRIP of 19 systems. ITAS will improve the target detection, recognition, and engagement capability of the HMMWV mounted and ground launched TOW missile by incorporating a Second Generation Forward Looking Infrared (2nd Gen FLIR) capability, a laser range finder, and automatic tracking features. This program is the pathfinder for 2nd Gen FLIR systems and provides a foundation for the IBAS (Improved Bradley Acquisition System). The high degree of commonality among 2nd Gen FLIR systems provides a strong production base and reduced logistics costs.

We have already begun upgrading older M1 tanks to the M1A2 configuration and to date, more than 30 M1s have completed the upgrade process. We initiated Bradley A3 and C2V systems upgrade development, and we are working to bring these systems on line more quickly. Longbow Apache is in flight test with all six prototypes and completed Force Development Test and Evaluation last fall. It will complete development with an IOT&E in mid-fiscal year 1995 and enter production in early fiscal year 1996. FUE for M1A2 is fiscal year 1996 and Longbow Apache FUE is fiscal year 1997. Once fielded, Longbow Apache's all weather target acquisition system will provide first-ever long-range detection and automated classification, prioritization, and target hand-over for the modernized Apache team and the other combat and command and control systems linked to it. For the first time ever, a coordinated, rapid fire, precision strike capability will be available to the maneuver force commander on a 24-hour basis in day/night/adverse weather conditions. We have postured for a fiscal year 1996 Longbow Hellfire production start with the award of long lead time items procurement and initial production facilitation contract in December 1994. In addition, the Army, in coordination with its Joint Venture partners (Martin Marietta/Westinghouse), has initiated an aggressive cost reduction plan that will reduce the production program from 10 years to 8 years while reducing the total procurement cost by a projected \$860 million. The addition of Longbow Hellfire to our missile inventory will significantly enhance the survivability of our Apache helicopter fleet and provide the battlefield commander flexibility across a wide-range of mission scenarios.

The Breacher program, currently in DEM/VAL, will complete prototype testing and enter EMD in fiscal year 1996. The Breacher is based on the M1 Abrams chassis and is equipped with a full-width mine clearing blade and a power-driven excavating arm to support maneuver force mobility through minefields, rubble, tank ditches, wire, and other obstructions. The Army currently has no system with these capabilities and the program was initiated as a result of lessons learned during Operation Desert Storm. Its importance cannot be overstated because the M-1 Breacher system provides the combined arms team with an integrated, counter-mine and counter-obstacle capability in a single, survivable vehicle.

In fiscal year 1996, the Line-of-Sight Antitank (LOSAT) program remains in the technology demonstration phase. The demonstration continues to mature the Kinetic Energy Missile (KEM) and Advanced Fire Control System. Fiscal year 1996 efforts will focus on the system integration onto an AGS chassis. Numerous studies and analyses have suggested that the KEM's overwhelming lethality can help satisfy the critical antiarmor needs of our early entry forces.

The Army has no plans for continued TOW missile production. In response to fiscal year 1995 congressional language that directed a report on the Army's strategy for a TOW missile replacement and projected shortfalls due to missile shelf life expiration, the Army has initiated efforts leading to a fiscal year 1998 program start for the Advanced Missile System—Heavy (AMS-H). Funds in fiscal year 1996 will support preparation of required program documentation and the RFP for both missile and platform integration.

The Multi-Purpose Individual Munition/Short Range Assault Weapon (MPIM/SRAW) is the dismounted soldier's lightweight, shoulder-fired weapon for short-range/urban terrain combat scenarios. This weapon will have the capability to fire from enclosures or in a prone position to increase survivability. The robust warhead has the capability to defeat modern armored personnel carriers and incapacitate personnel in reinforced masonry buildings and inside bunkers. The Army has entered into a cooperative development program with the U.S. Marine Corps (USMC). While the USMC SRAW program continues in EMD, the Army will demonstrate the SRAW technology with the MPIM warhead in an fiscal years 1995–1996 Technology Demonstration phase. The Army plans to award an EMD contract in fiscal year

1996. This cooperative Army/USMC program will reduce development and procurement costs for both services.

BATTLEFIELD DIGITIZATION

The creation of the digitized battlefield is critical to the Army's efforts to maintain a modern, but smaller, force capable of decisive victory—Force XXI. In order to field Force XXI, we must employ digital technology across the battlefield at every level. Digital systems provide a geometric increase in the amount of information gathered and the speed with which that information can be analyzed, tailored, and provided to the appropriate level of command.

Simply moving digits around the battlefield is not the answer. The ultimate objective of the process must be improved situational awareness to ensure integrated operations through all echelons within the Army and at the joint and combined levels. Clearly, when a commander spends less time figuring out where his forces are and what condition they are in, he can concentrate on taking action within the enemy's decision cycle and reach the critical point on the battlefield with sufficient force to dominate the maneuver battle.

The Army has made great strides in initiating the digitization process over the last year. We established the Army Digitization Office (ADO) as part of the Army staff to coordinate and integrate digitization throughout the Army. An Army Digitization Plan will guide the ADO's efforts to provide information technology to redesign the Army by the year 2000. In conjunction with the Army and Defense Science Boards, the ADO is coordinating the design of the following three architectures to control the effort: technical, system, and operational. The technical architecture leverages commercial standards and an open architecture to serve as a common basis for materiel development. The architecture will ensure compatibility and interoperability across the entire force. The systems and operational architectures will ensure an effective and efficient Command, Control and Communications (C3) system with critical information available to the right people at the right time.

At the brigade and below level, we are experimenting with an appliqué to bring digitization quickly into the Army. The appliqué set consists of a computer unit, display and data input device based on commercial off-the-shelf and Non-Developmental Item technologies and essential software that provide situational awareness and data flow at the tactical level. This appliqué, along with programs to upgrade digital systems on the M1A2 Abrams Main Battle Tank and the M2A3 Bradley Fighting Vehicle to an open architecture, will lead to a seamless digital communications architecture from the tactical to the strategic level and set the stage for a successful development of Force XXI.

Emerging systems such as Joint STARS and Crusader will enhance the digital system as they are fielded. They will be brought on line under the rules of the architectures in place and be more cost effective as a result. The future battlefield will link Force XXI at every level and across the globe. Space and sea information will be gathered and analyzed with the ground force information and tailored for every level of operations from the corps commander to the squad leader. Digitization will speed the tempo of the battle and increase lethality and survivability of all friendly formations.

ARMY SCIENCE AND TECHNOLOGY STRATEGY

To ensure that the Army science and technology program is consistent with national security, defense, and U.S. Army requirements, the Army Science and Technology Master Plan (ASTMP) is prepared annually. This strategic plan for the science and technology program is based on the Army leadership's vision of the future Army, as constrained by realistic funding limits. It serves as "top down" guidance from the Headquarters, Department of the Army, to all Army science and technology organizations, and it provides a vital link between DOD S&T Strategy and the Army major commands, major subordinate commands, and laboratories. We are vigorously supporting the five S&T management principles articulated in DOD's S&T Strategy:

1. Transition technology to address warfighting needs;
2. Reduce cost;
3. Strengthen the commercial-military industrial base;
4. Promote basic research; and
5. Assure quality.

The Army science and technology vision is to:

- Provide affordable and timely technology, training and support that meets the warfighters' needs to enable swift, decisive, low-casualty victories across the spectrum of conflict by coalition forces, anywhere.

- Develop and maintain a world-class network of government and private S&T capabilities for shortened acquisition cycles that is responsive to unexpected situations and to advances in technology; and produce affordable technology and weapon systems.

- Foster an S&T system employing best practices from any source to ensure continuous quality improvements, mutual trust, reduced cost, and managed risk.

The Army Science and Technology Agenda to support this vision is:

- Conduct "world-class" research and pursue technologies relevant to the Army, aided by peer review and Cooperative R&D Agreements with industry and academia.

- Comply with DOD and Army S&T vision and strategy, guided by a funding-constrained Army Science and Technology Master Plan.

- Strengthen the requirements process through intensive linkage with the Training and Doctrine Command (TRADOC) Battle Labs and Advanced Concepts Technology II (ACT II), aided by Advanced Distribution Simulation and Advanced Technology Demonstrations.

- Improve efficiency by stabilizing S&T priorities and funding.

- Improve program execution and oversight.

- Attract, develop, and retain quality scientists and engineers.

- Downsize the S&T infrastructure while improving focus, productivity, and quality.

Advanced Technology Demonstrations (ATDs)

ATDs are characterized by the following: large-scale both in resources and complexity; the operator/user involved from planning to final documentation; tested in a real and/or synthetic operational environment; finite schedule, typically 5 years or less; cost, schedule, and objective performance baselined in an ATD Plan approved by the Deputy Assistant Secretary for Research and Technology; and must meet or exceed exit criteria agreed upon by the warfighter and ATD manager at program inception before the technology in question will transition to development. Active participation by the user, as well as the developer, is required throughout the demonstration. At least one demonstration at a TRADOC Battle Lab and an Advanced Distributed Simulation are required. This enables the user to develop more informed requirements and the materiel developer to reduce risk prior to the initiation of full-scale system development. ATDs seek to demonstrate the potential for enhanced military operational capability and/or cost effectiveness. ATDs are developing and demonstrating critical technologies ranging from the 21st Century Land Warrior to integrated survivability for future rotorcraft and armored vehicles.

Advanced Concept Technology Demonstrations (ACTDs)

ACTDs are jointly planned by the warfighter and acquisition communities. ACTDs allow operational forces to experiment in the field and in simulation with new technology and concepts to determine potential improvements in doctrine, training, leadership, organizations, tactics and warfighting concepts. A CINC sponsor is required. Following successful demonstration with the sponsor, the capability is rapidly prototyped and left for up to 2 years with the CINC, thus giving him an interim, stay-behind capability pending formal acquisition decision. The Army has three ACTDs:

1. *The Joint Precision Strike Demonstration ACTD* is developing and demonstrating a system-of-systems concept that integrates surveillance, target acquisition, command, control, communications, precision weapons delivery, and combat assessment functions for rapid execution of strikes against high value, time-critical targets at extended ranges in minutes, not hours, day or night and even in bad weather, when aircraft are not often available. Last year at the Army Integration and Evaluation Center near Fort Belvoir, Virginia, we demonstrated to several members of the Roles and Mission Commission, congressional staff, Joint Staff, and OSD advanced target acquisition capabilities and automated deep operations coordination in conjunction with the employment of deep fire systems against high priority targets. The use of long-range, surface-to-surface improved ATACMS capable of destroying soft targets, under adverse weather conditions, in a precision strike scenario was demonstrated using a national network of live, virtual, and constructive simulation and live firing of the ATACMS missile at White Sands Missile Range, New Mexico. The fiscal year 1996 budget request will fund the demonstration in Korea of a much improved counterfire capability against simulated enemy long-range multiple rocket artillery operating from heavily fortified and protected positions in mountainous terrain. Emerging technologies will be integrated with advanced concepts and doctrine to ensure timely and responsive target acquisition and

streamlined command and control to destroy enemy multiple rocket launchers swiftly to protect our troops in South Korea.

2. *The Rapid Force Projection Initiative (RFPI) ACTD* is demonstrating technologies, concepts, and tactics to permit our early entry forces to defeat heavier forces, yet with improved deployability of our light forces. RFPI employs a "Hunter/Stand-off Killer" approach which relies on forward deployed sensors connected to precision, indirect fire weapon systems to attack an enemy armored force beyond direct fire range. Several stand-off killers will be evaluated, including a guided MLRS, guided mortar rounds, smart mines, and the Enhanced Fiber-Optic Missile. Simulations by TRADOC and government contractors have shown high potential for the RFPI approach to improving the survivability, lethality, and deployability of our "first to fight" forces.

3. *The Mine/Countermine ACTD* is a joint effort by the Army, Marine Corps, and Navy to demonstrate improved technology, concepts, doctrine, tactics, and organizations to counter the mine threat from the sea, across the beach, and inland. The Army has the lead for the detection and neutralization of the landmine threat. The emphasis is on remote detection and neutralization, both by vehicle mounted and dismounted approaches.

SCIENCE AND TECHNOLOGY OBJECTIVES

To better focus our scarce S&T resources on the customer's highest priority needs, the Army has established a set of 200 Science and Technology Objectives (STOs). A Science and Technology Objective states a specific, measurable, major technology advancement to be achieved by a specific fiscal year. It must be consistent with the funding available in the current year budget and the Program Objectives Memorandum (POM) for the Future Years Defense Program (FYDP) years. Only major, measurable, and foreseeable objectives are designated as STOs. Not every worthwhile, funded technology program is cited as an STO, because the Army must reserve some program flexibility for the laboratory or research, development and engineering center director to seize opportunities within his or her organization, based upon the organization's local talents and resources.

As is the case with ACTDs and ATDs, the Army science and technology community uses the STOs to focus the program, practice management by objectives, and provide feedback to our scientists and engineers regarding their productivity and customer satisfaction. STOs are reviewed and approved annually.

TECHNOLOGY TRANSFER

The Army continuously monitors new developments in the commercial sector looking for military applications. This "spin-on" of technology is of growing importance to the Army S&T program—not only from the domestic R&D programs but also from development overseas.

Conversely, where military R&D is in the lead (e.g., rotorcraft, night vision, infrared sensors) technology transfer to commercial uses is actively pursued. This "spin-off" of technology is important to our economic security. Some of the Army initiatives strengthening domestic technology transfer include:

- *Cooperative R&D*: It is Army policy to actively market technology that can benefit the public and private sectors, and to respond quickly to requests for technical assistance. The mechanisms for accomplishing this are Cooperative R&D Agreements (CRDAs), the Construction Productivity Advanced Research (CPAR) program, Patent Licensing Agreements (PLAs), and technical outreach programs. The cumulative Army totals from 1989 to 1995 are 431 CRDAs, 59 CPAR agreements, and 42 PLAs. Of these 490 agreements, 289 were still active in fiscal year 1994.

- *SBIR Programs*: The Small Business Innovation Research (SBIR) Program was begun in 1982 by an act of Congress. The Army is a key participant in this DOD-wide program to stimulate technology innovation in small businesses to meet Federal R&D needs. The fiscal year 1995 Army funding for this program, which has had some remarkable successes, was \$95.9 million, which includes \$4.5 million for the Small Business Technology Transfer (STTR) program.

- *University Research Centers*: The policy is to further Army basic research objectives by leveraging research programs in our world-class academic institutions. To accomplish this, the Army Research Office in Research Triangle Park, North Carolina, sponsors research through the Army Center of Excellence Program and through the Defense University Research Initiative. Through these programs the Army focuses active research participation with more than 20 American universities.

PROJECT RELIANCE

In November 1991, all three Service Acquisition Executives directed full implementation of Project Reliance in their respective services. Implementation of Tri-Service S&T Reliance also responds to (and provides inputs for) a number of important management functions and planning processes including the budget planning process, development of technology investment plans, and updates of the Defense Science and Technology Strategy.

The goals of the DOD S&T Reliance are to:

- Enhance science and technology;
- Ensure critical mass of resources to develop "world-class" products;
- Reduce redundant capabilities and eliminate unwarranted duplication;
- Gain efficiency through collocation and consolidation of in-house work where appropriate; and
- Preserve the services' mission-essential capabilities. The study phase of Reliance resulted in formal service agreements for joint planning, collocated research, or consolidation under a lead service for each of the technologies that were not service-unique.

Managing technology development is a dynamic process, and the S&T activities of the three services are not islands unto themselves. The notion of "leveraging" is based on a simple fact: The services' individual S&T accounts cannot fund all the R&D activities that any one service needs.

INFRASTRUCTURE

Laboratories and research, development and engineering centers are the key organizations responsible for technical leadership, scientific advancement, and support for the acquisition process. Working at a diversified set of physical resources, ranging from solid-state physics laboratories to outdoor experimental ranges, these personnel conduct research, technology development, "smart buyer," and fielded systems engineering support activities for the total Army.

The Army is consolidating laboratory and R&D center facilities, eliminating aging and technologically obsolete facilities, and leveraging relevant facilities of contractors and the other military services. Our in-house facility investments are focusing on those unique capabilities that truly must be owned by the Army itself.

Converting the Army Research Laboratory to an open, federated laboratory system is a major initiative that has caught the imagination and strong support of government, industry, and university researchers and leaders. A broad agency announcement was released in December 1994 soliciting to competitively enter into 5 year cooperative agreements with consortia for cooperative research in the following 5 areas critical to achieving Force XXI: telecommunications and information distribution; advanced sensors; advanced distributed simulation; software and intelligent systems; and advanced/interactive displays. Consortia must consist of a leading industry laboratory, with university partners. There will be a mutual exchange of technical staffs between the government and consortia. One consortia will be selected for each of the five areas this year. The Army appreciates the Senate Armed Services Committee's strong endorsement in congressional language last year for this important initiative.

Highly motivated, competent, well-trained people are essential to the success of the Army science and technology strategy. Keeping the in-house work force technically competent in a rapidly changing environment is a high priority objective for the future. The Reinvention Laboratory initiative allows revised procurement rules and personnel initiatives which will assist in meeting the challenge. Allowing Army scientists and engineers to perform more research at the bench has long been recognized as the number one recruitment and retention factor. Letting them share that bench with the best in class from industry and academia via the open, federated laboratory initiative will clearly strengthen the smaller Army laboratory system of the future.

ACQUISITION REFORM

There is abundant evidence that our acquisition system has evolved over the years into a confusing, bureaucratic system in which many processes are followed that contribute little or no value to the delivered item. Several recent, in-depth studies show that the "non-value-added" premium of unique defense acquisition processes and standards range from 18 to 40 percent of the base cost of the items. We cannot, we must not, and we will not continue to pay a premium for which we receive little value. Industry clearly agrees with us.

In the changing world, where our threats and missions are no longer as clearly defined as in the old bipolar world, we must be lean and agile in all facets of military operations, including our acquisition processes. This paradigm has been clearly recognized by Secretary of Defense Perry and all of us involved in the acquisition of goods and services to enable our Army to be the best. For the first time, the entire top leadership in DOD and the services is devoted to getting all of us a "bigger bang for the buck."

I view my single, most important mission while I am the Army Acquisition Executive as leaving behind a much better, more agile, enlightened, and more efficient acquisition system for the Army. I am happy to report that the Army is well out in front in implementing and institutionalizing a number of specific acquisition reform measures which we believe will realize the potential savings previously described.

Now, we are not renegades. We are working closely with OSD under Paul Kaminski's, the Under Secretary of Defense (Acquisition & Technology), superb leadership and Colleen Preston's, the Deputy Under Secretary of Defense (Acquisition Reform), day-to-day coordination to ensure that what we are doing will have a real payoff. Within that framework, however, we are doing and not waiting for "another study."

The cornerstone of our Army acquisition reform program is to delegate authority to and to empower our Program Executive Officers, Program Managers, and Systems Command Commanders to do the job. We are converting from a stifling, total risk avoidance culture to a risk management culture, and we are depending on those who most understand the risks to manage them. We will obviously operate under the laws and DOD regulations and guidelines.

The Congress has assisted us considerably in these endeavors, notably by passage of the Federal Acquisition Streamlining Act of 1994.

To the extent that we can eliminate superfluous, defense-unique processes and standards in our acquisition, we will truly be able to buy more from the total industrial base of the country, not just from defense-unique industry. This has huge potential advantages. One, technology in most areas is now led by commercial industry, not by the government. This is particularly true in electronic components, computer architecture, information systems and software, telecommunications, and automotive technology, all of which are critical in every Army system. Two, we can leverage off the R&D base of commercial industry and buy items already developed, thereby devoting more of our RDT&E dollars to unique defense technologies. We are already well along in these endeavors.

One example of the results of the Army's successful acquisition reform efforts involves the Precision Lightweight Global Positioning System Receiver (PLGR) procurement of a modified commercial product. This strategy reduced costs from \$34,000 to a little over \$900 per system—a huge cost reduction over that of a fully militarized system. The price of each PLGR falls to under \$840 in the 4th year of procurement. The PLGR is smaller, lighter, and more capable than the militarized system it replaced and comes with a 6 year performance and reliability warranty.

Reducing our dependence on military specifications and standards (MiL Specs/Stds) is part of the DOD strategy to reduce costs, shorten lead times, procure the best technology, and expand bid opportunities to the entire U.S. industrial base. Last June, Secretary Perry signed the DOD directive essentially eliminating MiL Specs/Stds. The Army then quickly developed and is executing a detailed plan to eliminate most MiL Specs/Stds from Army solicitations by 1996. The previous practice of mandating hundreds, if not thousands, of MiL Specs/Stds is changed to one using performance specifications and minimal MiL Specs/Stds. A few examples of recent Army solicitations that require no mandatory MiL Specs/Stds are: Crusader, ATACMS Block II, and Joint STARS GSM.

Other, significant acquisition successes have resulted from the Army's streamlining and reengineering initiatives. The TH-67 Creek (New Training Helicopter) is an example of using streamlined business practices and commercial off-the-shelf products to meet Army needs. The flight instructors and student pilots at Fort Rucker, Alabama, think it is an excellent primary trainer. The first aircraft was delivered only 8 months after contract award and 31 more within the first year. We have audited validated operations and support costs savings of \$20 million a year when compared with the older training aircraft. As an example of reengineering, the same virtual engineering approach with computer aided design/manufacturing techniques used by Boeing on the new 777 commercial airliner, were used to design the Comanche armed reconnaissance helicopter and to test very early the flight dynamics and aviation software packages. Comanche incorporated the commercial aviation technique of "test and use" prototyping, replacing the highly expensive practice of developing "throw away" models. In many applications, plastic encapsulated microcircuit

(PEMs) technology can replace ceramic encapsulated microcircuits, defined by obsolete Mil Specs/Sids. One of my first actions as Assistant Secretary was to lift the Army restriction on the use of PEMs. The Comanche contractor estimates that using PEMs will result in a savings of at least \$150,000 per airframe. The Comanche program applies commercial approaches where practical, and uses simulation to the maximum. Our goal is to retain full capabilities and to achieve several hundred million dollars of cost savings and avoidances.

Virtual simulations, which include prototyping, will be the key for compressing the materiel development cycle and ensuring that programs use and support new technologies. Interactively using these simulations on a consistent synthetic battlefield will allow soldiers and developers to better conceptualize, experiment, test and evaluate. The results will compress the time needed to integrate advanced technology with warfighting concepts, force design, and unit design. Designing systems in the virtual world—simulating rather than testing—virtual engineering and manufacturing will conserve our scarce resources. Equally important, senior Army and DOD leaders will operate within a shorter strategic decision cycle. We must expedite the process of getting weapons to our soldiers.

The Army's Crusader field artillery system has also adopted streamlining initiatives. We seek to lower the cost and reduce the time to acquire Crusader by reducing or eliminating non-value added requirements, conducting effective concurrent engineering through Integrated Product Development Teams, exploiting the use of rapid and virtual prototyping in engineering design, and streamlining operational testing through the aggressive use of Distributed Interactive Simulation. In short, with industry we will develop and field the finest artillery system in the world. Through our acquisition reform initiatives, we seek innovation, lower costs, and earlier fielding of the Crusader.

The Second Generation Forward Looking Infrared (2nd Gen FLIR) Horizontal Technology Integration (HTI) program continues to move at an accelerated pace. A year ago we reported a successful source selection after a 10 month effort by the Special Task Force. The Army Systems Acquisition Review Council met in July 1994 to review and approve Milestone I/II. The Army approved entry into EMD, and a contract was awarded the next day. This entire process was completed in less than 6 months. In fiscal year 1996, the Army will take delivery of the first FLIRs and begin government and contractor technical test and evaluation. We will soon be able to quantify major savings as a result of the HTI approach—enabling technologies across multiple systems to improve warfighting capability—and are looking for sensible ways to apply this technique to other modernization efforts which impact and crossover multiple platforms and battlefield scenarios.

The emphasis by senior Army leadership on the need for dramatic change in the way we do business has been critical to the change process. We have briefed and trained more than 5,000 Army and industry acquisition personnel on our innovative approach to acquiring weapon systems and equipment. Roadshow IV kicked off in December 1994, and is the fourth in a series of nationwide training sessions that began in 1991. The focus of Roadshow IV is performance specifications and best value source selection. The Navy and Air Force have announced their intention to duplicate the Army Roadshow series.

CONCLUSION

We have the solemn responsibility of ensuring that our men and women are well-equipped and have the decisive advantage they need to deter or win decisively in future conflicts. It is a formidable challenge in these days of shifting and nebulous threats and reduced resources.

The key to success is our commitment to continuous modernization and effective acquisition reform. Our program is delicately balanced and cannot be accomplished without reducing overhead, eliminating no-value-added/low-value-added elements and investing the savings back into features the user must have.

Our military success has taken us in a new direction and success has provided us with new challenges as well as opportunities. We are making tough choices and smart choices. We are on course. With your support, we will continue to provide our soldiers with world-class equipment.

Thank you.

Senator WARNER. Thank you very much. My first question is just going to be a very general one. It is somewhat personal in nature. I have been watching, as I hope each of you have, recently the remarkable reporting of what our military forces experienced in the Battle of the Bulge and most recently on Iwo Jima. I was not there.

I was just a young sailor in a training command during those periods.

This is what concerns me. The stories talk about the total and utter confusion of the troops as a consequence of this surprise attack in the Battle of the Bulge, and in the other conflict, thousands and thousands of miles away, just the sheer problems encountered with the terrain and so forth. You hear about all this digitization and cross-communication between units. What happens if this Army that you have now were suddenly hit with all this modern equipment with the Battle of the Bulge conflict where it really comes down to the very basic essentials and the ability of the individual soldier to pick up an individual piece of equipment and fight to defend himself and the mission of his unit? He may not have the benefit of all these high tech items. I am just wondering if we are not over-teching the whole system, given some of these conflicts that we have had in the past and indeed this country could experience in the future.

Did you watch any of this footage?

Mr. DECKER. I have seen some of it, yes, sir.

Senator WARNER. It is extraordinary.

Mr. DECKER. I am a reasonably avid student of military history.

Senator WARNER. Yes, I am sure you are.

Mr. DECKER. So, I am quite familiar with some of the both anecdotal and justified historical evidence of some of that happening. Let me respond to that in kind of a spontaneous way, and then I might ask my military colleagues here.

Senator WARNER. I would like to have their views. I am sure each of them have had their own experience in the combat fronts.

Mr. DECKER. In sort of a cliché statement that has been around a long time and is absolutely true—in land combat there is a fog of war. It is not necessarily poor visibility due to weather. The environment you are in if you are a low level unit leader, tank platoon leader, infantry platoon leader, down where the scramble is really going on, all the way to special forces guys on unique missions—they need a context of what is happening. The only thing they know is what is there in the range of their immediate capability, but we have coined a term that we think is critical called situational awareness. If a unit leader—and I will get to the point of what happens if the pipes go away, but if a small unit leader can access data that shows the situation not only where he is right now, but in the context of what is happening around him, they are going to make better decisions and they are going to engage and operate inside the enemy's information cycle, even at squad leader or platoon leader level.

So, that is the hypothesis behind the technology to support data being available, the right kind of data, to all levels on the battlefield so that smart soldiers—and they are damned smart at that level—will make damned smart decisions because they've got the guts and the courage to start with and they are well trained, and it will come out better in the long run. That is the whole premise behind winning the information war.

The technology we believe is here to support it, and as our experiments move forward—and we will probably talk about those later in the hearing—we will test that hypothesis, and we will real-

ly understand with our instrumentation and our subjective judgments if this is a valid hypothesis. It seems so logical to me that I cannot conceive that it will not test properly and prove out.

If we can do that, we truly believe—and we believe the systems can have the reliability in terms of technical reliability—that we can eliminate a substantial amount of that fog of war that is presented to a fighting soldier.

Now, let us go back to the second dimension of your question, sir, and I think it is a very valid one, and that is what about the poor soldier—I do not mean poor in any pejorative sense—who has got the burden and his unit leader down at the level we are talking about?

I think for years a number of people who have done things for the Army, including myself in my Army Science Board days, and some National Academy studies, have advocated treating the soldier as a system. The soldier is the building block of the Army. We have missile systems, we have aviation systems, and we have communications systems. And then we've got soldiers. The soldier needs to be optimized with the right kind of protective clothing, all these things, and integrated well.

So, the Army has now established—and I am personally grateful to General Salomon in the AMC command—a soldier systems command that is going to integrate all the things that are done for soldiers to help them out, but they were being done piecemeal up until now. Now we are going to try to integrate all the protective clothing, all the weaponry, all the communications, and all the aids that can help a soldier do just what you say and do his job, but do it in a way so he is not burdened.

So, I think those two broad thrusts, treating the soldier as a system, treat him or her individually, and the digitization aim is to eliminate the fog of war.

Perhaps the last question that might be presupposed by your general line of questioning is, what happens if all this collapses in the battlefield? I think that is a question of reliability and we have to prove and make sure that the systems reliability of the kind of thing we are doing in the networking of information will be reliable enough so it will be graceful degradation and not a general collapsing. And I believe we can get there.

Senator WARNER. Let me add one other question, and then I would like to hear from other members of the panel. We are joined by Senator Exon here. We are not only classmates, but both of us caught part of World War II. Let me give you another little personal recollection.

Senator EXON. We won World War II.

Senator WARNER. Well, you probably did. I was sitting back getting educated. But I will never forget the first night I had in boot camp. We had been on a train for a couple of days and we marched into a big room about 4 o'clock in the morning, I think there were about 450 to 500 men on that train. A fellow stood up on a big table and he said all you guys who cannot read and write raise your hand and the rest of you smart so and so's help them fill out their forms. This was a bit of a shock to me because I had had the benefit of a very fine education, including advanced calculus, Latin and French, and everything else. All of a sudden, I was filling out

forms for some of the folks who were less fortunate than myself. This was many years ago, 50 to be exact.

The next time I experienced this was when I was in the Pentagon in a position similar to yours. Here we were in Vietnam and we were getting a lot of category 4's, and we were doing the best we could with them. But we somehow made the system work.

Now, my question to you is all of a sudden we are confronted with another problem which this country does not have the benefit of limiting our Armed Forces to the high school graduates which you are getting now, and of those graduates, you can pick and choose among the finest. But all of a sudden you have got to start running through your programs for frankly putting in as replacements individuals who have not had the benefit of an infrastructure training which will enable them to acquire the skills to operate this high tech equipment. That could happen.

Mr. DECKER. That is a good point. I have some thoughts on that, but I think rather than dominate the stage, if I may, I would perhaps turn to General Hite. I would like to let you get his perspective as a military professional.

General HITE. Yes, sir. One of the things that comes to me very quickly, as I look at the changes in technology since the Korean war, there are several factors that have improved the soldiers' capabilities on the battlefield. One of the major ones is the ability to conduct operations during all hours of the day with limited visibility and adverse weather conditions. We did not have that many years ago. So, now we have the ability to operate when the enemy does not want us to operate, and that is during the period of darkness.

We also have the ability to do deep fires. We have the sensors that enable us to go out and select targets far out ahead of the battlefield, to get that information back very quickly to shooters, and to shape the battle 200 to 300 kilometers in front of the forward line of troops. We did not have that before. That is going to be a tremendous advantage.

We also have a mix of the high tech weapons that we are speaking of which do require some level of sophistication to operate, such as the Patriot system. We have a mix of those high tech weapons, but we also have, in addition to those, some weapons that do not have that high technology built into them, such as the TOW missile system. Back in its time it was a high tech weapon. We still have it. It is a direct fire weapon, and it is still very effective on the battlefield.

We have other weapons such as Abrams tank where the tank itself is a high tech weapon; but once you fire it, it is a kinetic energy or chemical energy round which gives our soldiers the opportunity to engage the enemy with a direct fire approach.

Senator WARNER. General, I have studied your equipment and you actually came in to brief me on several pieces.

General HITE. Yes, sir.

Senator WARNER. But I could not agree. I think you are doing the right thing. You are right on the cutting edge of tech using your dollars wisely to acquire it. Maybe my old questions are outdated, but I am just concerned that if you got faced with a draft, you begin to get category 4's, we cannot chuck those people out just

saying you cannot pass the mental test. We need them. Second, all hell breaks out on the battlefield, confusion, and sometimes moving the dials and punching the buttons versus self-survival is a real problem.

General HITE. Yes, sir. I would agree that that is going to be a problem.

Senator WARNER. All right. General Anderson, do you have a view?

General ANDERSON. Sir, I agree with everything that Mr. Decker and General Hite have said, but I would like to approach it and answer it in a slightly different way, if I may.

I think your concern is right on, and as a matter of fact, I would submit to you that the Chief of Staff of the Army, General Sullivan, shares that concern. There are many historical precedents, of course, and we have all experienced it ourselves in one form or another.

I think the way that the Army intends to go at this is as we have looked at our vision for Force XXI—that is the vision for taking the Army into the 21st century—it is based upon three things: change, continuity, and growth. We are going to change those old, outmoded ways of doing business that we did in the Cold War. We are going to grow so that we can take advantage of the technologies that were described here earlier, the digitization and the other modern systems. But we are going to be constant with those things that have gotten us here, the values that we have built up over the last 219 years.

But the key, sir, I think, is that embedded within that vision are the six imperatives that the Chief has laid out. In other words, growing the Army is not just a question of modernizing the Army. Growing the Army means that we have to look at training and how that is affected. We have to look at leader development. We have to look at force design, modern equipment, as well as all of the other things.

Now, the way that we intend to approach that is through a series of advanced warfighting experiments, which will be conducted between now and the turn of the century to give us insights into what does this technology give us, and what can we do to adjust our ways of doing business so we better understand it. Not just with the hardware but with simulations and those kinds of things as well, so that we can put it in the hands of soldiers and we will truly understand what it is now.

Senator WARNER. I have used a little more of my time, but go back and look over those films. After you were in the Battle of the Bulge about 12 days, there was a single file of cooks, bakers, and clerk typists moving toward the front. They understood somehow to pick up an M1 and a 60-millimeter mortar.

General ANDERSON. Absolutely.

Senator WARNER. I am not so sure that that same single file could move into this equipment you have today.

General ANDERSON. Yes, sir.

Senator WARNER. Senator Levin.

Senator LEVIN. First, Mr. Chairman, we are reminded of that individual soldier just within the last week when I guess the most decorated combat veteran in American history, a fellow from Michi-

gan by the name of Matt Urban, was buried in Arlington. He was a Congressional Medal of Honor winner and a real hero in the Battle of the Bulge who did just the kind of thing that Senator Warner is talking about. He just took over when the need was there and was able to carry on. An extraordinary story, the Matt Urban story, and we were reminded again of it just this week at Arlington.

The question which Senator Warner raises is one I want to pursue. I was not planning on pursuing it actually, as I looked at the questions I was going to ask you fellows this morning. I still may get to them, but I want to pursue Senator Warner's question because I think it is so important, and that is this collapse and fog issue.

I have been out to the National Training Center and was incredibly impressed by what we are doing. I think it is exactly right. That information which will be available to a unit commander, because his scouts can transmit pictures back at night as to what is going on on that battlefield, is information which can make all the difference in the world. For instance, that is just one form of information. That is just a soldier with a thermal sight pointing it. It is not particularly complicated.

In fact, we asked a soldier who was a newcomer who did not have any particular great skill as to how difficult it was, and he said it was not difficult at all. I am just pointing my sights at what is out there. The unit commander has the problem. He has to integrate all the pictures that he is getting back from all his scouts to try to come up with an overview and use information which is coming in en masse from a whole bunch of scouts out there.

But I can see this difficulty coming up, and I am wondering whether or not we are not just training people, which is important, but whether or not we are trying to defeat our own systems. Are we spending sufficient time in trying to figure out how to defeat that information flow to have an electronic collapse or whatever the right words are?

I really had not, again, thought of pursuing this this morning, but I think that the subject is so important, particularly in the interim period until we have this in place and know exactly what its strengths and weaknesses are. We need backup for it. We cannot rely totally on it.

Let me get to my specific question. To what extent are we trying to defeat our own communication capability to see whether an enemy might be able, through a pulse or whatever the technology might be, to defeat these tremendous advances, which I am all for, by the way? I do not want to suggest that I am not. I think they are revolutionary. They can give a commander a capability which no commander in history has ever had to see various parts of a battlefield, all times of day, all kinds of weather, personally to see it, to make decisions. But are we spending funds to figure out how an enemy could defeat this kind of an information flow?

Mr. DECKER. Let me turn that over to General Guenther. I am not copping out. I have got some thoughts, but this is a field in which he is the Army's military leadership expert.

General GUENTHER. The three systems that are legacy systems that will provide the information we are providing horizontally and vertically to the field are all looked at constantly by both defensive

information and offensive information folks in the labs. This is to be sure we know what enemy capabilities are to be able to jam or get into those systems.

The three systems I specifically talk about are MSE, EPLRS, and SINGARS, the three actual radio systems that we pass our data on right now. In each one of those systems, we have security that protect them very well, for right now.

There is also an initiative on the part of NSA, as we move into the future and bring in additional systems, for multi-level security that is being worked to protect systems both at echelons above corps and below, that we may interface with, as well as those that we put into the future. This is an area that is a national issue. It is not just the Army issue, and I am well aware of that. I take on these responsibilities as I assume this job for the Army. I just assumed it months ago; that is, of defensive information warfare, which is part of what you are asking. That is an area that we need to continue to put a lot of look into as we field all of the communications and terminal equipment.

The terminal equipment that is going out there also will have a capability—and it is being developed by NSA—for individual terminal protection as well once we get a card in there, called a Fortessa card, that will allow us up to a secret high capability.

So, sir, I think I can unequivocally say that it is a very big concern for us.

One other point I would make with you is that we also get concerned as we develop commercial off-the-shelf equipment and so forth with EMI, and the capability for any enemy to pick up electromagnetic capabilities out of that equipment. And that is part of our testing procedure as we run that equipment in the field or put it in the shelters, to be sure that that is looked at very carefully.

Senator LEVIN. Secretary Decker, let me get back to an area that you and I have talked about, which is the investment accounts. The fiscal year 1996 budget and 1997 budget total about \$10 billion for combined R&D and procurement budget for the Army. This compares to 1994 and 1995's budget of over \$12 billion. So, there is roughly about a \$2 billion reduction from 1994 and 1995 to 1996-1997.

I think everybody concedes this is, as you phrase it, thin. I think everybody concedes this is really an area where we have got some significant concern.

If you had some additional funds, where would you put them? Give me your priority list. If we came up with an additional \$1 billion—just take a notional amount—where would you put any additional modernization funds?

Mr. DECKER. Of course, it depends on how much, obviously. But in my opinion we have some severe problems. Let me preface my answer with a comment quickly that I think sometimes we do not do well enough in the Army in articulating, and I will get to the specific answer. I promise.

The Army essentially is a ground combat force. It needs sophisticated weaponry and it needs close to the ground aviation. But the Army does not fly, does not have a roll-in mission, and does not envision to fly at 40,000 feet. So, we have a dirty, dirty environment. There is no doubt. The world is a very dirty place. So, whether we

are doing a small contingency mission, we are doing a humanitarian support mission, doing a small patrol special forces mission, or a full-up regional conflict, we've got to mess around in that environment and operate high and efficient.

So, of necessity, there are a plethora of small programs that are critical, maybe no one of which would lose the war. Some of our chemical protection programs do not make the screen in terms of dollars, but we would hurt if we decimated those too badly.

So, we have a harder problem in coming up with a clean, focused set of priorities. I personally think—and this is not pejorative—we have a more difficult problem because of what we are than the other services with the possible exception of the Marines. They've got to fight in the same kind of dirty place we do. So, we have a larger set of requirements, and we try to scrub those and we try to work with the DCSOPS and separate the wheat from the chaff.

Now having said that, you end up looking at the big ticket items that you need hard because they consume resources, whereas a hundred other smaller programs together consume resources. That is kind of what we are doing.

So, you will hear conflicting views on your question. If you talk to someone who is in the military who is a proponent for chemical/biological protection, which is critical, that is going to be a high priority with that individual. Trying to get the context of total priority is tough. We try to get consensus. We get fairly close.

I do not think we tell that story often enough. Everybody sort of seems to think we get to pick the big ticket items and focus, and that is really hard to do. Having said that, in my opinion we have some severe problems in some procurement accounts that we need for near-term readiness in the next couple of years, and then we cannot ignore our long-term needs. That is a hell of a balance. So, given an addition—and by the way, I've got to make one more statement. I believe—

Senator WARNER. Mr. Secretary, we have got to sort of keep us on time. This has gotten into Mr. Exon's time. Mr. Exon, why do you not pick up then.

Mr. DECKER. Well, let me give a quick answer.

Senator LEVIN. I did not get an answer to my question yet, though.

Mr. DECKER. I would say, depending on whatever you had, I would certainly like to see if we could do something to accelerate the ultimate fielding of Comanche. That is critical to the next century. I would think we need to fix our tactical wheeled vehicle program. That is vital today and in the 21st century. I think we would need to fix our conventional ammunition program and get it more stable. I kind of view those as three in a bucket, and then there is a second set of buckets. So, that is my answer.

Senator LEVIN. Thank you.

Senator WARNER. Sorry to have infringed.

Senator EXON. No problem. Thank you very much. Thank you, Mr. Chairman, and thank you, gentlemen, for being here.

I would just like to start out by maybe setting the record straight a little bit because I do not think we want to leave in the official record anything that is inaccurate. I listened very carefully to the experiences of my great friend and colleague, the chairman, had in

World War II. Being an Army man, I never had the experience with——

Senator WARNER. What is that?

Senator EXON. My fellow people not being able to read and write. [Laughter.]

I thought you would pick up on that a little quicker than that, John.

Senator WARNER. Maybe the Navy got all of them.

Senator EXON. That is right. That is where they are and that is where they should be and that is where they should be kept. [Laughter.]

I had to get a plug in for the Army.

I think the line of questioning is tremendously interesting here. It talks about the whole future. I guess with all the high tech things we have been through in the other branches of service, it is about time we bring some of these advancements down to the battlefield.

Just two questions and then I will yield. What do we have from intelligence sources that you can talk about in the classification that we are in here today with regard to potential foes or combination of foes? Are our allies doing anywhere near as much in this new modern battlefield? Are we in a race with anybody in particular at this time, or are we just looking aggressively forward, as I think we should, to anything that would give us the upper hand in future combat?

Senator WARNER. We are in an unclassified hearing.

Mr. DECKER. I understand and I will keep it that way.

Let me respond to one of the specific sub-questions you had. Are we in a race with anybody in particular? The analogy I would use, of course, is in the Cold War days with advanced long-range missileery and air defense systems and electronic warfare systems where it was point/counterpoint and you had to spend to stay technology overmatched.

I do not think we are in that kind of a race today, but if you look at the technologies being developed and fielded by even non-enemy nations, I still think we are the best. But I think they are only a notch behind in advanced fighter planes, guided missiles. If we sort of looked out 10 years and characterized whom we might be most likely to fight, I do not think they are developing the base over that period to get where we are.

But the proliferation problem is terrible. We have rules and we have things about agreements among a number of nations about proliferation of certain kinds of weaponry, but they just do not work as well as they should.

Senator EXON. Can we assume, Mr. Secretary, that at least as far as the cutting edge is concerned, you think that we are in a good position now with regard to any potential enemy?

Mr. DECKER. Now?

Senator EXON. Yes, now.

Mr. DECKER. Yes.

Senator EXON. But that gap could close pretty rapidly with the exponential advance in battlefield technologies, is that correct?

Mr. DECKER. I am pulling this number out of the air, but it is all right. If Iraq decided to spend \$50 billion to \$70 billion to go

acquire the next generation of Soviet T82 tanks or T92 tanks, and to buy some fighter airplanes, and maybe buy in some relatively low cross-section cruise missiles, that could be available to them within the next 5 years, and that is buying off of what is currently being developed and fielded in other countries. And they could do that. I am not saying they will. If they did that, then they have a rollover of technology that is a generation newer at least than what was in Desert Storm. So, it is this access to those weaponry by other nations that could be a real problem, and that is why we preach so much that we have to maintain a technology overmatch.

Senator EXON. That is fine. Now, let me go on to one more thing that maybe will focus in on what we are doing or not doing and how quickly we are going to get where we would like to be.

I would like to ask you about what I understand is called an experimental force, EXFOR. As I understand this, all of the new weapons systems and prototypes are going to be tested in this new exercise called EXFOR, and that the Army has designated the 1st Brigade or the 2nd Armored Division at Fort Hood to be the designated force.

Will this force EXFOR be the lead experimentation with regard to the effectiveness of our new systems? How difficult will it be to train these forces?

Mr. DECKER. I will give you a short form answer, and then I really am going to move it over to General Anderson. He is in the middle, being from the OPS side of the house, of all that planning.

The short form answer is yes. It is designated to be that force for the rest of this century to test our hypothesis and to see in hard terms, qualitative and quantitative, the effectiveness of the information war Army XXI. So, I think the short form answer is yes, and I would like General Anderson to amplify.

General ANDERSON. Thank you, sir. That is exactly right. The experimental force has been designated to be the 2nd Armored Division at Fort Hood, Texas. Our intent is to equip that force with modern equipment as available either in the form of prototypes, surrogates, or actual equipment. That equipping is to be completed no later than June 1996, and that is so they will have sufficient time to be able to assimilate all of that equipment, develop their training, techniques, and procedures and be prepared to conduct an advanced warfighting experiment at the National Training Center in February 1997.

The follow-on to that, sir, will then be another exercise that will encompass the entire division, and following that will be another exercise that will encompass a corps with these types of equipment. So, you are exactly correct. The answer is yes.

Senator EXON. A key here, though, is what has been brought up previously and I want to drive home again. If we come up with the most sophisticated, wonderful system in the world but if it is relatively easily blinded by some type of electromagnetic force in the battlefield area, it could be all for naught. Is that one of the things that you are going to be checking in this exercise?

General ANDERSON. Sir, the vulnerability of the equipment to those kinds of things will be tested, but not necessarily as a part of that exercise. The technical testing of that will be done at the Joint Electronic Warfare Testing Center at Fort Huachuca. We

will, in fact, test degraded operations with the brigade and the division to simulate the fact that they have lost those capabilities so that we make our adjustments. So sir, the answer to your question is yes.

Senator EXON. I would just emphasize it as much as possible rather than check these things sometimes in a highly sophisticated setting, sometimes it is a good idea when we are conducting these exercises to have the potential enemy represented by some force that might tend to try to send out static or jamming to disrupt operations and communications. The actual field testing that you are talking about in my view is probably a lot more reliable from the standpoint of operation than some of the tests that come out of laboratories. But in any event, I am glad you are pursuing that.

Thank you. Thank you, Mr. Chairman.

Senator WARNER. Thank you, Senator Exon. Senator Coats.

Senator COATS. Secretary Decker, I refer to a not very glamorous item is the budget category of what you call tactical wheeled vehicles, trucks.

Mr. DECKER. We cannot use a simple term, sir. [Laughter.]

Senator COATS. You make the statement that trucks are a critical element of the Army's operational effectiveness and today's modern mobile Army cannot run without its trucks. But the budget constraints have forced some tough decisions in the TWV programs, including probably the toughest decision and that is contract cancellation of the medium tactical vehicles.

How do you reconcile those two statements? If it is a critical element, but we are forcing cancellation, what are we going to do?

Mr. DECKER. What I would like to do, if I may, if the chairman will permit, is show three charts that illustrate the problem and then I will give you a direct answer. Perhaps you might pass them around to the members. I am not surprised and amazed that someone asked that question. It is a very good one.

Senator WARNER. It looks like you are well prepared.

Senator COATS. This is not a staged question.

Senator WARNER. Could I make an administrative announcement to the Senators?

Mr. DECKER. Yes, sir.

Senator WARNER. There are two votes back to back scheduled for the Senate commencing at 10:30 a.m. It would be the chairman's intent to remain until the last portion of the first vote, then go vote. But the question is, can we have an expression from Senators not present as to whether or not they would desire to have the hearing continue beyond the questioning of the Senator from Connecticut or whether the Senators would want a second round? Because I would intend then to have the questions from the Senator from Connecticut and the hearing concluded by about 20 minutes to 11 o'clock and release the witnesses. Thank you.

Thank you, Senator. Please take extra time.

Mr. DECKER. If you look at chart 1 entitled Condition of the Fleet, what you see there—it is a little busy chart, but it shows for you those categories of vehicles—and these are all well justified as requirements—the average age here in 1995 as we sit. The right-hand chart says if we continued with the FYDP as presented and certain presumptions about what might be in that budget beyond

the year 2001, what happens to the average age when we get to the year 2010. As you see, we get a little improvement in some, but degradation severely in others.

Now, the middle column—and this is based on lots of reliability engineering and operations support analysis—is what the average age objective should be for a healthy fleet. So, you see we never do get there.

Incidentally, that is an objective function. You can do fairly well if you have an objective function that shows higher than that, and we cannot afford to get to the objective function across the board. That is an assertion if you give us all the money in the world.

But that states the problem.

Now, what does that mean in reconciling the two questions you pointed out? It says that if we are with the current FYDP, of which the first year is the fiscal year 1996 budget request, we can operate. We would use an overhaul and repair strategy mixed with the modest amount of new and reconditioned trucks that come out of that budget, and our O&S costs remain substantially higher. But we could survive. There is some risk because the reliability of the trucks just is not as good. So, the penalty you pay is much higher O&S costs, but you can survive and get the job done.

The problem is it is not worth paying that extra O&S cost, but it takes a fairly significant up-front investment to get it reduced. We got caught in the squeeze in this modernization pause of severe funding restraints that I described to you a little earlier before you came in, sir.

What we have done—and we owe you a report that will be out—it is from previous congressional language—that will be out to the Congress on April 3. We are not finished with the analysis yet.

The second page is the guidelines of our investment strategy, and all that says is that we have our forces designated in force packages. The higher force package is the higher priority. They are the first to fight, if you will. So, what we do is we prioritize the equipping with either remanufactured, or new vehicles, or reconditioned vehicles by force package, and that drives the system.

We are looking at options that you see on the third page. I sort of showed you the end result of the current POM, which is the current FYDP, and what happens to the average age with concomitant, significant increase in O&S cost. We are looking at three other options, and they will be part of the analysis that we will present to you when we send you our report on April 3.

So, the bottom line is we can survive, but we have old trucks and we have a huge O&S cost.

Senator COATS. Just take a look at 2 and a half ton and 5 ton trucks, with economic lives of 20 and 22 years. Your max objective is 10 and 11 years. Currently one of them is 25.7 years average age.

Mr. DECKER. Right.

Senator COATS. An economic life of 20, and then we are canceling the contract? Does that make sense?

Mr. DECKER. No. We got boxed in on severe fiscal constraints in the defense guidance.

Senator COATS. That is what I figured. Whenever that happens, the least glamorous item goes first.

Mr. DECKER. But it was done in the context that we do not have the money today, and so we will make do with the 25-year old truck with much higher O&S costs, and use an overhaul/repair strategy to keep those trucks running. They are deficient in certain requirements as well, but we just have to live with that if we cannot fix it in the out-years.

Senator COATS. I do not have all the statistics in front of me, but I remember the stories about the decision to beef up the left flank in Desert Storm, and they were commandeering trucks from vegetable farmers and oil rig drillers and anybody they could get their hands on to move men and equipment. I guess my question is, what if that type of support was not available? Did we not learn a lesson from that? Do we not want to make sure that we do not find ourselves in the same bind in the future?

Mr. DECKER. Yes, sir. I think before you came in, I was asked—I just want to refresh. It will be in the record. Senator Levin had asked hypothetically if there were additional fixes, what would be your priorities, and I put tactical wheeled vehicles in the top three priorities.

Senator COATS. I apologize for not being here for that. I am glad you did. It is one thing to say it, it is another thing to fund it.

Mr. DECKER. That is right.

Senator COATS. Well, Mr. Chairman, I would just suggest that we are leaving ourselves vulnerable in a very unglamorous, non-sophisticated area. Sometimes when the commanding officer makes the decision that he is going to change the strategy and he needs to move a substantial number of troops and equipment in a hurry, I would hate to have the motor pool say 40 percent of our trucks are down; they do not work. The commander says why not, and the motor pool says the average age is 30 years old. We are doing the best we can but we have run out of baling wire.

Senator WARNER. Senator, it is well taken. I have just been advised by our staff, Colonel Brownlee, that he is prepared to make a recommendation to you such that you can hopefully fix this problem. Perhaps you would have a moment to visit with him.

Senator COATS. By all means. Thank you for the extra time. I appreciate it.

Senator WARNER. I thank the Senator from Indiana.

Mr. DECKER. Thank you for your questions. You are right on, sir.

Senator COATS. Thank you, Mr. Secretary. I am very concerned about it.

Mr. DECKER. I am too. Believe me.

Senator WARNER. Thank you.

Senator from Connecticut.

Senator LIEBERMAN. Thank you, Mr. Chairman.

Mr. Secretary and gentlemen, thanks for being here.

Secretary Decker, I must say, as I listened to your testimony, I am very grateful that you have been willing to come in and serve the country in this position. You and your staff are the right people, at the right time because you bring together, not only your military experience, but you also bring together a scientific/technological background as well as business experience, which is extraordinarily helpful to us. I think all of us understand that we are in a new phase of warfare with the impact of technology, but in some

sense we understand it as laymen and are trying to understand it better. I think your expertise and experience really help us to do that.

Mr. DECKER. Thank you, sir.

Senator LIEBERMAN. And I appreciate your service very much. I apologize for being late. Has anybody asked you about the TRP program?

Mr. DECKER. At great length at yesterday's Armed Services hearing. At great length, yes, sir. Here today, no.

Senator LIEBERMAN. Well, maybe I will just ask you to give your short form answer because as we talk about the importance of technology and warfare of the future, I think it is important to restate, because some of these programs are under attack here now, the significance of the investment through TRP which will produce the results that we will see maybe 5 or 10 years from now. I am going to leave it at that since you've been briefed on that in the last couple of days.

Mr. DECKER. It was very useful to get the feedback from the committee yesterday.

I genuinely believe that the strategy of where we need to be with the TRP program is correct. If you do not put a forcing function in conjunction with acquisition reform measures, to remove the barriers, to getting at the total industrial base of the country, you do not get anywhere. But a forcing function that says we are going to look for things that have military relevance—we should not gerrymander that—that also could have commercial relevance, we will get other companies, rather than traditional defense suppliers, participating and we will develop a technology. We need to say it will be relevant.

Two examples that Dr. Kaminski gave yesterday. One is in multi-chip modules. That is not a big civilian market yet. We are it. But the forecast among people in the marketplace—this is electronic multi-chips on a substrate—that will be a \$700 million market in the next 8 years, and we see that has happened already. So, we may be the stimulus to get it moving and then we will only be about a 10 percent of the market supplier. But that is clearly dual-use and it fits.

So, I say the strategy is correct. There was a concern that the further it moves away from myself and the other service acquisition executives and people like Mr. Singley who think nothing but warfighting relevance—and they really do—that it will get into a little bit of a hobby shop mode, and that is a danger. Now, that really depends on the fortitude and experience and character of the person managing. I have a lot of high personal regard for Dr. Kaminski. I have been a business associate of his, and he clearly is going to terminate programs if they are not getting anyplace, and he is going to insist on military relevance.

Senator LIEBERMAN. Well, that is important.

Mr. DECKER. He has only been there 5 months and I think he needs a shot at it. About a year from now—and he is willing to do this—we ought to put him to the test and say, okay, show us what is happening.

Senator LIEBERMAN. Amen.

Let me ask you about the Comanche program which you know I have been interested in. I thought the part of your prepared statement about the Comanche was one of the best sort of short statements of its importance that I have seen, and reading from it, "During Operation Desert Storm, our ground commanders never got the near real-time battlefield information they needed to make the best technical timely decisions on the employment of battlefield forces, and the Comanche, fielded along with J-STARS and UAV's, will help correct this most critical deficiency." That is a very significant statement.

I appreciate your response to Senator Levin that some of the majority members of the committee are talking about increasing the amount of money for defense as opposed to what was in the administration's proposal. I am very interested and supportive of that, and I hope we can do that on a bipartisan basis. I appreciated your response that one of your priorities would be Comanche.

Can you give me—because there are a lot of numbers and items bouncing around—your best assessment of where the program is? I know that there was an agreement after the Deutch memo to go to an R&D program leading to two prototypes which would fly. Now there is discussion of six more, which Secretary West and General Sullivan discussed would reach their initial operating capacity I think about the middle of the first decade of the next century. Is that where we are now?

As you know, there is particular concern about the impact of that and other decisions on the \$120 million which has been held back in the current year budget for Comanche.

Mr. DECKER. Let me try to give you a terse description of the program status. Your basic context and description is correct.

As I stated in my opening statement, in the bleak guidance of dollars we had to get ready for the fiscal years 1996 through the 2001 budget drill, we had to make a lot of tough choices. Our submission to OSD prior to the Deutch memo had Comanche in at a current line, that would field it sooner than where it is going to get fielded now. And OSD in their agonizing in a direction to us, directed us to reduce it back and to move production and fielding. Of course, fielding would have been early after the turn of the century anyway; remove production and thereby fielding into the next century, but that was about it. Then there was some specification of dollars.

The net result is the current proposal in front of you for the fiscal year 1996 budget and the 5-year stream beyond is approximately \$2.2 billion. They did ask us to replan the program. We did not wait around to do that. We spent a significant amount of money. I have a lot of personal time invested in this, and so have our program executive officers. We have worked with the DCSOPS people on the requirement side, and I am just being candid with you. We should not spend \$2.2 billion of taxpayers' money on a pure R&D program.

Senator LIEBERMAN. Right.

Mr. DECKER. We do not need that much to prove stuff out. So, we need a plan that fits the envelope of those dollars that if we look beyond the 2001, gets us to production and fielding. Let us not cut our thinking off at 2001.

I believe in acquisition streamlining. The design tools used in today's modern aviation design and electronics design and the simulations that prove it out and the flight simulators are remarkable, and our management thinking has not caught up with what we can do yet.

Senator LIEBERMAN. I agree.

Mr. DECKER. I think you know that. The two models going together now are being screwed together and everything fits. The first Comanche will fly officially in November on schedule.

What we said was let us just get rid of all the folderol to get ready for production this decade, and let us do the two models we have, and let us build six models with the reconnaissance package on it. The weapons package is low risk. It is all mature. The Longbow, Hellfire, and all that comes later because the reconnaissance piece of armed reconnaissance is what is critical. Let us build six of those later this term, put them in the field probably with the EXFOR in its armored cav troop. We let it really wring those out for a couple of years and prove out the value of stealth helicopter day/night, all-weather reconnaissance—do what I have in my statement. What better way can you find out?

That gives you a unit operational evaluation system that in theory you could go to war with in a hurry if you had to. Then we harden up the design, which will be just like that, add the weapons—this is after the 2001—do the IOT&E formal testing, order the long-lead parts in 2004, and begin to produce LRIP in 2005.

That program is executable. I think there are some doubts in the minds of some people in the building that it is, and so they are kind of hanging onto that \$120 million until we prove out that plan, which we have about completed. Dr. Kaminski is highly favored with that plan, and I think it is going to be approved. So, we will have Comanche flying in the next century under that plan around 2005.

Senator LIEBERMAN. That will give us six additional in 2005. Is that correct?

Mr. DECKER. You will get six additional in around 2001.

Senator LIEBERMAN. Okay. That is what I thought.

Mr. DECKER. That is called unit operational evaluation system.

Senator LIEBERMAN. Right.

Mr. DECKER. But they will be with real soldiers and air cav troop, and they will experiment with it as we watch and collect data in their real maneuvers.

Senator LIEBERMAN. Your hopes for 2005?

Mr. DECKER. Well, given that the six UOES models, unit operational evaluation system, prove out what we think will prove out and it gets correctly instrumented, rave notices from the warfighters, and if it does not, we ought to stop.

Senator LIEBERMAN. Sure.

Mr. DECKER. You have to kill these things. But I know the answer to that.

Then we have the funding proposed, although it is not in the FYDP—it is beyond—to add the weaponry to those six—that is a very straightforward thing to do. Then take those six with that same unit and put it through the formal IOT&E—initial operation, test, and evaluation. That happens around 2003 or 2004. Success

there says we begin to order the long leads for the first low rate initial production which begins in 2005, and actually fielding I think is 2006.

Senator LIEBERMAN. Got it, okay.

Mr. DECKER. That is an executable program. We can speed that up.

Senator LIEBERMAN. Good luck. Thank you.

Thank you, Mr. Chairman.

Senator WARNER. I will return, following the two votes, which should have started but I will proceed until such time as the votes begin.

I am going to follow on a little bit on this same subject for Senator Santorum.

Mr. Chairman, we welcome you.

Chairman THURMOND. Thank you. You go right ahead.

Senator WARNER. Yes, sir.

Senator Santorum was unable to join us here this morning.

This \$120 million for the Comanche helicopter now on hold—we understand that the release of these funds is imminent. Can you confirm that?

Mr. DECKER. Sir, do you know what a buck slip memo is? It is a little handwritten thing.

Senator WARNER. Yes.

Mr. DECKER. Well, we have a buck slip memo from one of the assistant controllers that says they are getting prepared to release the funds, and that is what we have. They should release the funds. There is nowreason to withhold them. All courses on Comanche say we need the full 1995 budget unless you cancel the program, and so it just seems to be a way to make us jump through hoops and get our program proved out, which we have done. So, I think it is about ready to be confirmed. If it is not released by April 1, we are in deep yogurt.

Senator WARNER. Will you kindly take it upon yourself to keep Senator Santorum advised on a real-time basis?

Mr. DECKER. Yes, sir.

Senator WARNER. I appreciate that very much. There may be others on the committee that would likewise wish to be advised.

Mr. DECKER. Yes, sir. I would be happy to do that.

Senator WARNER. Thank you very much. General Hite, in the defense supplemental bill which is currently on the floor of the Senate, \$78 million from fiscal year 1995 funds from the Apache program is used to offset costs for peace and humanitarian operations. What effect will this cut have on the Apache program?

General HITE. Sir, that cut will move the program to the right. It will delay the initial operational capability by about a year. It will also add cost to the program because we are moving it to the right, and it will also cause a production gap from the start of the program of about 6 to 8 months.

Senator WARNER. That is a very clear answer, but I do not understand. What is the difference between right and left?

General HITE. Instead of fielding the system in October 1997, we will start fielding it in October 1998, sir.

Mr. DECKER. Move to the right of the time line, sir.

Senator WARNER. That is moving to the right, but it is the wrong decision. [Laughter.]

General HITE. Sir, I totally agree.

Senator WARNER. We are always willing to learn these new acronyms. [Laughter.]

Last year this committee authorized an MLRS battalion for the Kansas National Guard and a battalion for the South Carolina National Guard. Could you advise us as to the status of fielding these battalions?

General ANDERSON. Sir, I think at this moment what we have done is we have made arrangements between South Carolina and Kansas to field incrementally. In other words, so that both States will get the capability, we will field a battery in Kansas and then a battery in South Carolina, and we will do it that way. I would like to return a report for the record, if I may, on precisely where we are at the moment on those fieldings.

General HITE. Sir, I can add to that somewhat. It will require about \$43 million to buy the nine launchers required to complete those fieldings, or we can take about \$16 million and refurbish some other launchers and complete those fieldings at a much lower cost.

Senator WARNER. You intend then to further advise the committee, and I would suggest that correspondence go directly to the two Senators from each of those two States so that they likewise are advised.

General ANDERSON. Yes, sir.

Senator WARNER. Mr. Secretary, I had the opportunity to visit with General Hite and others about the tank program. Speaking only for myself, I am quite satisfied that the Army is doing what it can given the fiscal constraints. I was not aware of the severity of this problem. Somehow I felt that all of the M1s, whether they are A1s and A2s and so forth, were still on the front line and the front cutting edge, but that is clearly not the case as the world moves on very rapidly in the modernization of tanks, particularly a number of countries building the new tanks. So, I am certainly going to support you on that program.

Mr. DECKER. Thank you, sir.

Senator WARNER. And I anticipate the committee will do likewise.

Mr. Secretary, let us just sort of do a wrap-up here. The Army, according to our figures, has received only 12.9 percent of the total DOD budget request for RDT&E and 16.2 percent of the total DOD budget request for procurement for fiscal year 1996. There is a question that I used to ask many years ago when I was sitting where you were sitting. I am not sure. Is that a fair proportion? I am giving you an invitation to get involved with your sister services here a little bit.

Mr. DECKER. Thank you, sir.

I guess the short form answer to that—I try to base on needs. I genuinely and philosophically believe we have to interoperate. We cannot win wars without the Air Force. We cannot win wars without air superiority. We cannot win wars without occupying things on the ground. Some people think we can. We sure as hell cannot. And we cannot win wars without the Navy. Strategic deployability

is critical to us in both services, and in many cases combat capability. So, it gets to be a dilemma when the—

Senator WARNER. Well, are you just quietly saying this is as much as you can tell the committee at this time?

Mr. DECKER. No. I will give you a direct answer. I do not think it is fair, but I think the zero sum game we are playing with on budgets has forced it down. I think it needs adjusting. That is my own personal statement for the record.

Senator WARNER. That is good. That is what this committee expects. During the course of your confirmation, we made it very clear from time to time we would ask your personal opinion, and I will put that in the category that that is your reply.

Mr. DECKER. Thank you, sir.

Senator WARNER. Secretary Decker, all the military services who have presented their budgets to the committee have reflected increased funds for acquisition in the out-years. It is always easy to show increased funding in the out-years. Speaking of the Army, where will you get additional funds for acquisition in the out-years?

Mr. DECKER. The answer follows my opening statement when I paraphrased Secretary Perry's strategy. If the strategy does not work, I do not have a good answer. During the drawdown of forces from the peak of the Cold War to what will be the currently agreed upon force structure, the Air Force will take wings out of the system, the Navy will take ships out of the system, the Army will take divisions and related units out of the system. So, we get down to 10 active divisions and support units and the necessary training infrastructure around the end of fiscal year 1996.

Senator WARNER. Mr. Secretary, I would like now to recognize our Chairman. He wishes to speak to one of your colleagues about a recent—

Chairman THURMOND. Well, I will just take a half a minute.

Senator WARNER. Take all you want.

Mr. DECKER. How are you, sir? Nice to see you.

Senator WARNER. For those who may not know it, the Chairman is a major general.

Mr. DECKER. I know that.

Chairman THURMOND. I just want to express my appreciation to all of you gentlemen for your capable and dedicated service to your country. I do not know what we would do without able people like you all, and I wish to congratulate General Hite upon his promotion to three-star general.

General HITE. Thank you very much, sir.

Chairman THURMOND. I wish you well.

General HITE. Thank you, sir.

Chairman THURMOND. Thank you, Mr. Chairman.

Mr. DECKER. Thank you, sir. Those comments mean a lot to us. We appreciate that.

Senator WARNER. Senator Lieberman, do you have further questions?

Senator LIEBERMAN. Mr. Chairman, not at all. I gave Secretary Decker a letter about small arms acquisition, and I would appreciate a response.

Mr. DECKER. It is in the works.

Senator LIEBERMAN. Thank you.

Mr. DECKER. We will give you a straightforward response to it, sir. We have the letter.

Senator LIEBERMAN. Great. Thank you.

Senator WARNER. Thank you, Senator.

There will be some questions for the record submitted by members who are attending other hearings this morning, and I will continue just for a brief period before I depart to vote. This has been an excellent hearing. I wish to state that on behalf of the Chair and other members of the committee.

These are the hearings which do not attract all the television and other things around here, but we really get down to a quiet, methodical, and responsive way to those infrastructure issues which are so important to the continued existence of the individual services.

I think that you can judge from the questions here that certainly in this committee we are concerned about the reduction in the funding. We understand the fiscal problems, but we see the world becoming a more threatened world, vastly different than 6 or 7 years ago where there was a certain polarization and a clarity of the threat, and today with the proliferation of weapons of mass destruction and the like, it is more difficult for you and the other planners in the U.S. Army to adequately prepare for the contingencies. They are not as easily definable.

Somehow I am going to work up a little amendment along the lines of what happens if all this equipment does not work and suddenly there is a heavy infusion of people who just do not have the training into the battlefield? That still troubles me. I would like to have a little more reflective thought on that by the Department of the Army at some level. It is an issue I want to continue to follow.

In previous years, Mr. Secretary, the Congress provided additional funding for the acceleration of Joint STARS light ground station program to expedite the development of a lightweight, more mobile ground station to support U.S. forces. Can you give us an update on that program?

Mr. DECKER. Yes, sir. It is one of the programs that we have gotten a number of waivers on, not in capability, in our acquisition streamlining from OSD. So, it is under streamlined management and it is doing superbly. In fact, this afternoon, there is an Army systems acquisition review council for it to go to its next milestone. I have looked at the data. I will not be there. I will be at another hearing, but General Forster will be there, along with General Tilleli, our Vice Chief.

That program is in excellent shape. It is meeting its cost goals. It will be delivered on time. In fact, it will be ready before the airplane in my opinion, and I am giving you a qualitative statement that it is in very, very good shape. Any comments?

General HITE. Sir, Congress asked us to accelerate that program 2 years ago, provided us funding to do that, and as the Secretary says, it has been a very successful program. We are getting ready to go on contract for another 12 production units.

Senator WARNER. Last year the committee authorized funding for additional commander's tactical terminals for the Army and recommended procurement for CTT to be accelerated. Let us have a status on that program.

Mr. DECKER. I am not as intimately familiar with that one. We have got to look at our records here, sir.

Senator WARNER. You know, it is so interesting. When I used to come over and testify, we really brought in four dolly carts full of files, and we had a whole team of fellows to go through. I think you do remarkably well with just several large books.

Well, I tell you what. We have had a good hearing. Supply that for the record.

General HITE. Sir, I have it.

Senator WARNER. You got it?

General HITE. I found it, yes, sir.

We fielded over 200 of the combat tactical trainers to date and we are integrating into the Joint STARS program. It is working very well. You did plus us up and we have a streamlined procurement package in place for accelerated production of the three-channel CTT system. We are going to award the contract for that package the end of May, and we expect deliveries off that contract about a year from May, June 1996.

Senator WARNER. Good.

Well, gentlemen, thank you very much. In my view you have done a very credible and commendable job on behalf of the Department of the Army. I thank you, each one of you, and I also thank the staff of the committee for their hard work in preparing for this hearing.

[Questions for the record with answers supplied follow:]

QUESTION SUBMITTED BY SENATOR JOHN W. WARNER

SMALL ARMS PROCUREMENT

Senator WARNER. General Hite, in the fiscal year 1995 Defense Authorization Conference Report, the conferees agreed to provide funds to continue to procure small arms to buy over the next several years the Army's stated requirements for M9 9mm pistols, M4 Carbines, M16A2 Assault Rifles, M249 Squad Automatic Weapons and MK19-3 40mm Grenade Machine Guns. The authorizing committees also provided authority for the Army to initiate multiyear procurements in order to achieve efficient, stable production rates and facilitate preserving the essential elements of the small arms industrial base.

The Army did not take any action to initiate multiyear procurements in the fiscal year 1996 Defense budget request, nor did the Army include any funds for small arms in the recent budget request. I understand that if additional funds were provided, the Army would like to pursue the initiation of multiyear procurements for small arms in fiscal year 1996 in accordance with the fiscal year 1995 Defense Authorization Act. What support would the Army need to get these programs underway?

General HITE. The Army fully understands the Congress' intent regarding small arms. Consequently, as a part of our ongoing fiscal year 1997-2001 program formulation, our goal is to structure a program that meets Army requirements and complies with congressional direction. A total of \$45.5 million in fiscal year 1996 is required to establish a rational procurement strategy that initiates multiyear contracts in fiscal year 1996. A breakout of this total is shown below:

	<i>Millions</i>
5.56 Carbine, M4	\$6.5
M16A2 Rifle	6.5
Machine Gun, 5.56 (SAW)	12.5
Grenade Launcher, Auto, 40mm, MK19-3	20.0

QUESTIONS SUBMITTED BY SENATOR TRENT LOTT

HYDRA-70 ROCKETS

Senator LOTT. I understand the Hydra-70 rocket was recently grounded due to premature detonations. What is the status of the Hydra-70 grounding? Has the Army determined the cause of these failures? Have you identified a solution for this problem? What is the projected cost of your proposed corrective action? When will the Army remove the grounding restriction?

Mr. DECKER. Use of all Hydra-70 rockets was suspended in October 1994 due to several occurrences of premature rupture of the rocket motor. The Army has taken a series of actions to ensure that aviator training continues. Tactical assets are restricted to "combat use only" and would be available in the event of a conflict.

The Army has determined the most probable cause of the rocket motor ruptures and has an approved plan to solve the problem. Implementation of the plan will increase the production cost of the motor by \$5 to \$10 per unit. The x-ray of existing rocket motor assets will cost approximately \$65 each. Restrictions can be removed from the current inventory when the rocket motors or bare propellant grains are inspected and found to be sound. Assets should begin to become available by mid summer. Inspection of the complete training inventory will require 12-18 months.

Senator LOTT. How many of these rockets are currently in the Army inventory? Does your fix to this problem require reevaluation of every rocket in the inventory?

Mr. DECKER. There are approximately \$588,000 Hydra-70 rockets in the Army inventory. All rockets in the inventory will be evaluated for serviceability.

Senator LOTT. How many of these rockets are required to meet your training requirement?

Mr. DECKER. The present Army annual training requirement is approximately 212,000 rockets.

Senator LOTT. How has this grounding affected unit readiness?

Mr. DECKER. While actions have been taken to minimize the impact of the suspension, there is no question that training has been affected. Department of the Army has prioritized aviation units by identifying the ones that will receive available rockets first, preplating rockets that we anticipate can be used as soon as approval is received, and planning to quickly distribute training rockets as soon as inspections are completed.

Senator LOTT. Besides the propellant problem, what other changes to the rocket system has the Army had to fix in order to ensure it continued operational use? What was the cost of these changes?

Mr. DECKER. All problems with the Hydra-70 have been motor related. One company produced a nozzle with too much sealant, affecting approximately 175,000 rockets. Replacement of defective nozzles is ongoing. The total cost of replacement is approximately \$10 million.

Senator LOTT. Have there been any foreign users of the 2.75" rocket affected by the grounding?

Mr. DECKER. Yes, there are many foreign users affected by the suspension.

Senator LOTT. The current Hydra-70 contains propellants, which, when ignited, disperses lead into the atmosphere. What is the Army doing to move toward a cleaner burning rocket propellant? What is the cost of that change?

Mr. DECKER. Research and development for the Hydra-70 is done at the Naval Surface Warfare Center at Indian Head, MD. They have worked to produce a lead-free motor within the same cost base. To date, they have spent approximately \$2.5 million and are scheduled to have a working lead-free propellant grain operational for the fiscal year 1997 production buy. Testing and integration will require another \$1.5 million for a total expenditure of approximately \$4.0 million.

Senator LOTT. The Army recently awarded a new contract for the current Hydra-70 rocket motor. In fact, the award was made after the Hydra-70 was grounded due to premature propellant detonation. What was the Army's justification for proceeding with this award before identifying the problem, its cause, and its projected cost to correct?

Mr. DECKER. The Army requires these Hydra-70 rockets to conduct training and maintain the proficiency of aircrews. The Army's highest priority is to maintain readiness, making the timing of this contract important. The Army started an investigation into the causes of early motor blows in December 1993, and published a report on May 13, 1994, identifying the most probable cause and making recommendations to solve the problem. The request for proposal (RFP) was not issued until June 1994 after the Army was sure it knew what had caused the problem. To further verify the conclusions and recommendations of the root cause analysis team, a panel of area experts was convened in February 1995. The panel validated

the findings of the root cause analysis team, and made recommendations for future changes to the manufacturing process. Corrective actions will be incorporated into the production process for new rocket grains provided as Government Furnished Equipment to the new Hydra-70 systems contractor.

Senator LOTT. What is the Army's projected total unit cost for Hydra-70 rocket motors, including vendor, GFE propellant, and rework costs for the current inventory?

Mr. DECKER. The rocket grain costs approximately \$185; and the complete rocket motor with the grain costs less than \$350. The cost to inspect the existing inventory (all DOD customers), to cull out defective motors, has been estimated to be \$50 million. This is a preliminary estimate which will be updated once the x-ray requirements have been finalized. This estimate is based on using x-ray methods that are labor intensive. Alternative automated methods are being evaluated and may bring the cost down significantly.

Senator LOTT. How many 2.75" rockets were expended during combat operations in Operation Desert Storm?

Mr. DECKER. Approximately 4,000 Hydra-70 rockets were expended during combat operations in Operation Desert Storm.

Senator LOTT. During the 1980s the Army invested substantial sums to develop a composite motor, flechette warhead, along with a hypervelocity technology. The effort was managed by the Army Missile Command. If the Army had available an operational hypervelocity/flechette warhead rocket during Desert Storm, would you have used it?

Mr. DECKER. The hypervelocity flechette developed by the Missile Command in the 1980s was primarily for air to air applications and, as such, would not likely have been used in Desert Storm, where there was no significant enemy helicopter threat. Hypervelocity rockets were recently analyzed in the Joint Cost and Operational Effectiveness Analysis (JCOEA) for the Advanced Rocket System (ARS). It was determined that the marginal increase in effectiveness that the higher velocity motor provided did not justify the increase in cost and loss of shelf life.

Senator LOTT. Last year, the Defense Authorization Conference Report contained a provision encouraging the Army to qualify for operational use of a Commercially Developed hypervelocity rocket whose technology was partially the result of previous Army investment. This Non-Development Item has several positive attributes: It is a possible Hydra-70 replacement; does not require a new launcher; is shipboard compliant; burns cleaner; is more accurate; and flies faster. What action has the Army taken to qualify for operational use of this Non-Development Item?

Mr. DECKER. The Army has no requirement for a hypervelocity rocket. In order to comply with the spirit of the last years Defense Authorization Conference Report, the Army has sought to improve the existing motor by:

Applying commercial automobile air bag technology to produce an igniter which will mitigate the Hazards of Electromagnetic Radiation to Ordnance (HERO);

Developing and incorporating a lead-free propellant to the Hydra-70, which is scheduled to be introduced to production in mid-fiscal year 1997.

Any rocket motor with a higher velocity than the current Hydra-70 would have to be requalified with every warhead, fuze, parachute, ram air decelerator and aircraft type it would be fired from. Rewriting software for the fire control systems and testing to prove air worthiness alone would cost millions of dollars.

QUESTIONS SUBMITTED BY SENATOR DAN COATS

"CRUSADER" ADVANCED FIELD ARTILLERY SYSTEM (AFAS)

Senator COATS. The following questions are based on the "Crusader" Advanced Field Artillery System (AFAS) based on press release information on the transmission contract. What guidance did the Crusader Team receive regarding the selection decision? Where is this documented?

Mr. DECKER. The Crusader acquisition strategy allows the sole source prime contractor, United Defense, Limited Partnership (UDLP), to select the Crusader's propulsion system. The Army developed, and provided to UDLP, the system's performance requirements and selection guidelines. In accordance with the government's criteria, UDLP chose engine and transmission suppliers. The Crusader Request for Proposals listed performance requirements in the system specifications, Operational Requirements Documents (ORDs) and Power Package/Drive Train Data Description. The Army provided UDLP a copy of the Army Materiel Command Pamphlet on Conducting Best Value Procurements, a general guidance document on the subject topic.

Senator COATS. What was the Crusader Team rationale for creating a second heavy combat vehicle transmission base when the existing base is severely under utilized?

Mr. DECKER. The selected transmission manufacturer is part of the existing combat vehicle transmission base. They built all the transmissions for the M2/3 Bradley Fighting Vehicle, production of which began about 1980, and have an established record of performance. The UDLP selection was made based on a "best value" determination for the Crusader system.

Senator COATS. What guidance, if any, did the Crusader Team receive regarding previous Army investment in propulsion system technologies? Was this guidance followed?

Mr. DECKER. UDLP was aware of the investment in engine technology made by the Army prior to making the Crusader engine selection. This information was presented in the engine vendors' proposals and was reiterated during UDLP site visits to the engine offerors' facilities conducted as a part of the selection process. UDLP made its propulsion system selections based on a "best value" determination; a process used in competitive negotiated contracting to select the most advantageous offer by evaluating and comparing factors in addition to cost and price. During the selection process, UDLP evaluated Crusader development and production costs as part of the "best value" determination. The Army's prior investment costs were considered to the extent that they contributed to the current level of maturity of a particular engine or transmission item or technology included in a proposal to UDLP. Based upon the United Defense presentation of the selection process and the UDLP decisions, the Army believes the process was conducted and the decisions made in a fair and impartial manner.

TRUCK PROGRAM

Senator COATS. The Army has conducted an in depth review of the truck programs currently fielded and in development. Congress has asked for a study of the mix of trucks in the light, medium and heavy range. This review also is to address the procurement of new and re-manufactured vehicles. What can you tell the subcommittee about the future of truck programs in the Army? How will that effect the fiscal year 1996 budget currently in front of the committee?

Mr. DECKER. Current TWV funding situation in the FYDP ad EPA will cause the Army's TWV fleet to be 60 percent overaged by 2010. Analysis of the Army's TWV programs has shown that the lack of level funding in the current FYDP for TWVs cannot sustain the TWV Industrial Base and exacerbates the aging profiles of all fleets. The inadequacy of funding will cause escalating O&S costs and drastically reduce readiness rates. The PLS flatrack shortage remains at 30,000 and shortages continue to exist in the HETS and HEMTT fleets.

The burden is upon the Army in building the RDA plan to come to grips with what is the best approach to begin fixing the tactical truck problem. The Tactical Wheeled Vehicle Investment Strategy you mentioned is the first step in that process.

FUNDING SHORTFALLS

Senator COATS. What are the Army's top four categories for funding shortfalls in the fiscal year 1996 budget request?

Mr. DECKER. I can only speak definitively to priorities for additional funding in the Army's Modernization Program. I believe that additional funding up to the range of \$500 million to \$1 billion should go to modernization. That is my perspective when look at the severe magnitude of decline of the Army's Research, Development and Acquisition budget from fiscal year 1995 to what was requested for fiscal year 1996. Critical programs were severely damaged.

HUEY SERVICE LIFE EXTENSION PROGRAM

Senator COATS. The Congress has identified the UH-1 Huey helicopter for a Service Life Extension Program (SLEP) for the National Guard. Prior year funding in the Army Aviation Procurement account has been designated in the amount of \$15 million for such a program. In addition the Huey SLEP has been labeled a "congressional interest item" in legislative language. Can you provide the subcommittee a description of the program? Has the prior year funding been applied to such a program? If not, where are the funds and to what programs have they been applied?

Mr. DECKER. Currently there are no plans to conduct a SLEP of the UH-1. Congressionally directed studies of the UH-1 SLEP and the Light Utility Helicopter (LUH), were completed by the Army's Training and Doctrine Command (TRADOC) and the U.S. Army Aviation Center in May 1994. The studies were subsequently

approved at Headquarters Department of the Army and forwarded to Congress in July 1994. The studies recommended that if the UH-1 were used to fill the LUH role, then a minimum SLEP consisting of only avionics and wiring be considered for the 131 LUH aircraft. The prior year funds (\$15 million) have been withheld by the Office of the Secretary of Defense. In light of the lack of funding for new utility helicopters in the Future Year Defense Plan for fiscal years 1996-2001, we may have to re-examine this question in more detail.

BATTLEFIELD COMBAT IDENTIFICATION SYSTEM (BCIS)

Senator COATS. During Operation Desert Storm, a quarter of our combat casualties were due to fratricide. What are the Army's plans for reducing fratricide in future conflicts, particularly in operating with its allies and other services?

Mr. DECKER. Since the end of Operation Desert Storm there has been an increased emphasis on fratricide reduction. Doctrinal changes have stressed fratricide prevention and those changes enhanced Army, joint, and coalition capstone doctrine. Specifically, fratricide is emphasized during our training at Combat Training Centers; the Center for Army Lessons Learned has distributed publications to our units. The Armor Center developed and distributed an anti-fratricide video tape; we developed a Personal Computer based Combat Vehicle ID trainer; and Fratricide prevention measures are taught in the Battalion/Brigade Pre-Command Course and during all leader development courses. As new measures and devices are developed, we ensure that our units and training centers receive them as rapidly as possible.

Improved situation awareness provided through Battlefield Digitization will improve our ability to direct and maneuver our forces. It will also provide individual weapon platforms with up to date friendly and enemy situation information that will significantly assist with the fratricide problem in cases where spatial separation provides enough confidence to engage targets. We also believe, however, as opposing forces maneuver and become entangled, that through-the-sight positive identification must be provided to the gunner.

For a Quick Fix solution, we have fielded Combat Identification Panels and Budd Lights. These devices provide this through-the-sight capability, but these passive devices have always been considered to be a transitional solution.

As the near-term solution, the Army selected the Battlefield Combat Identification System (BCIS). Based on a millimeter wave question and answer technology, BCIS will provide a robust answer to positive target identification during the gunners firing sequence. The first BCIS devices were delivered early this year and initial platform field experiments have been very successful.

We have been working closely with our allies on the fratricide problem. For now, the Alliance nations have agreed to use our Quick Fix solution for any multinational operation taking place up to around 1997/98. Beyond that time, the only active target ID device likely to be available for coalition operations is the BCIS. For the longer term, work continues with our allies to develop an active capability which may also be linked to situational awareness through the fielding of allied battlefield management systems.

Senator COATS. Where does the Battlefield Combat Identification System (BCIS) fit into these plans?

Mr. DECKER. BCIS provides near-term capabilities that will be demonstrated in Task Force XXI and could be fielded on our contingency forces platforms as early as fiscal year 1998. We also have plans to demonstrate BCIS on several different allied platforms in fiscal years 1996/97.

Senator COATS. Is BCIS an integral part of the "Digitization of the battlefield" initiative and the Task Force XXI experiments process? Will there be enough results for a procurement decision in order to fix this serious problem?

Mr. DECKER. Yes, the BCIS will participate in Task Force XXI. BCIS has a comprehensive developmental and operational test program. Developmental testing to date has been very successful and the Pre-Production Qualification test scheduled for 3rd-4th quarter fiscal year 1995. The Limited User Test (LUT), which will provide initial insight into the effectiveness of BCIS in its operational environment, will be conducted during 1st quarter fiscal year 1996. We are currently exploring structuring the Task Force XXI experiment as an operational test before the BCIS procurement decision, now scheduled for 4th quarter fiscal year 1997, is made.

Senator COATS. Does the Army have enough funding in its program for the BCIS solution to this problem?

Mr. DECKER. Currently the PM has sufficient funding to complete the Engineering and Manufacturing Development phase and participate in the Task Force XXI exercise in 2nd quarter fiscal year 1997. BCIS procurement is part of the overall

Digitization program, and is under consideration in the Army's fiscal years 1997-2001 program build.

EXPERIMENTAL FORCE (EXFOR)

Senator COATS. I notice in recent news reports that the Army has designated the 1st Brigade of the 2nd Armored Division as the Experimental Force, or "EXFOR". This unit will, as I understand it, be getting the latest equipment to provide a thorough test for the Army's digitization initiative. I understand that, although the Army is going to great lengths to get prototypes, such as two Longbow Apaches, to the EXFOR, the Army will not be outfitting the EXFOR with the M1A2. Existing M1A1s will be outfitted with so-called applique systems to test digitization. On the other hand I have heard Army officials describe the M1A2 as the centerpiece of the Army's digitization efforts.

If that is true, why is the Army only planning to test M1A1s with applique systems in the digitization field tests? Does this plan reflect an erosion of the Army's commitment to the M1A2 Abrams Upgrade Program?

Mr. DECKER. The Army is fully committed to the M1A2 Upgrade Program. It is one of our key long-term modernization efforts. The issue with integration of the M1A2 into the EXFOR is more a technical and timing issue.

The first EXFOR exercise is supposed to occur in February 1997. The intent is to have all the equipment issued and soldiers trained to use it prior to June 1, 1996. This action allows the 2d Armored Division sufficient amount of time to train for the exercise. Most of this "digitized" equipment is going to be in the hands of a unit for the first time outside of initial concept and validation testing; therefore, the unit needs time to synchronize all of the pieces. The first battalion set of 58 M1A2s is scheduled to be fielded to the 1st Cavalry Division in first quarter fiscal year 1996 and the next set is fielded in first quarter fiscal year 1997, we do not complete fielding of the 1st Cavalry until first quarter fiscal year 1999, so we only have a limited number available. The M1A2s are going into one of our "first to fight" units in case of a potential contingency.

In addition there is the issue of digital compatibility. Currently the M1A2 is not compatible with our other digital systems. The Army is working on that and we expect to have the problem solved by the time of the Divisional-level exercise in March 1998. By fielding the M1A2s to the 1st Cavalry Division, also at Fort Hood, we can have some of them participate in that exercise and test the digital links. Furthermore, the majority of the tank force in the next decade will be M1A1s. In fact, with current funding many Active component units will not receive the M1A2. The digital links of the applique with the M1A1 and our other digital systems are critical to the Army's success on the future battlefield.

While we recognize the M1A2 is crucial to the Army's lethality on the future battlefield and see it as an important link in the digital system, there are many other components of that system. All of them are important in the overall synchronization effort. The key for the first EXFOR exercise will be to test the digital systems on those modernization platforms that will be the mainstays on the Army's near-term battlefield and determine where we need to improve them. The key to the overall effort, as always, will be in its value to the Commander on the ground the person who will have to make the decisions and focus the efforts of the entire force to ensure that America's Army remains the premier force of the future.

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

HELICOPTER INDUSTRIAL BASE

Senator LEVIN. Termination of Black Hawk production in fiscal year 1997 causes several concerns: (1) the Army will have to operate UH-1 helicopters for the foreseeable future, and (2) termination could create a real industrial base problem. The Black Hawk prime contractor may have to close production operations after the Black Hawk line closes. The same contractor is also a Comanche team member. Why does the Army believe that the Comanche program is a viable program, when there is some significant risk that one of the prime contractors may not survive until the Comanche would be ready to enter production?

Mr. DECKER. First, Comanche production technology is not dependent on Black Hawk (UH-60) production. There is very little similarity in production process between the two programs. If all medium utility helicopter (UH-60, SH-60, etc.) purchases dry up, not just the UH-60s but also the SH-60s (Navy variant) and Foreign Military Sales, Sikorsky might become a much smaller company with Comanche as its only product. Further, under the terms of the teaming agreement signed by Boe-

ing and Sikorsky, if either Boeing or Sikorsky becomes unable to perform, the other partner becomes solely responsible for Comanche development. As far as the health of the helicopter industrial base, the Army, under the leadership of the Office of the Assistant Secretary of Defense for Economic Security, is conducting an in-depth study. I believe it will provide objective answers to these questions in the near future.

COMANCHE TECHNOLOGY DEMONSTRATION

Senator LEVIN. Several years ago, the Army proposed making the Comanche program a technology demonstration effort. The Senate Armed Services Committee did not agree with the Army's plan then because it looked like an expensive "science fair" project that would produce little residual value for the government. Now the Army's plan is to build two flying demonstrators and then six reconnaissance prototypes. Although the Army hopes to begin Comanche production in 2005, there is no DOD commitment or funding to do so.

How is the current Army Comanche plan different from the previous Army technology demonstration plan, what value will it provide the government, and why should Congress now support it?

What does the Army expect to learn from the current Comanche prototype program that could not be learned from an aggressive modeling and simulation program?

Mr. DECKER. The previous technology program you reference was a Demonstration/Validation only program directed by OSD (fiscal year 1993 President's budget). It contained no production funds in the out years and no additional RDT&E funds. We agree it was a dead end program. The current program lays out a logical and aggressive move toward production and includes procurement dollars in the Army's outyear plan beyond the Future Year Development Program (1996-2001). The program presented by the Army and approved by the March 21, 1995 Defense Acquisition Decision Memorandum includes milestones for Initial Operational Capability and a full scale production decision.

This program strategy places six early operational capability aircraft in the hands of the soldier for early testing and evaluation. These tests include real time simulations and participation at the combat training centers to prove the value of Comanche reconnaissance capabilities on the battlefield of the future. This gives the Army time to evaluate the latest technologies and make the necessary design changes prior to any production decisions. This strategy will insure state of the art soldier tested aircraft are delivered to the field.

ATTACK HELICOPTER STRUCTURE

Senator LEVIN. As I understand your force structure plans, the Army will be short of what it believes is the requirement for Apaches to outfit all attack helicopter battalions by over 70 helicopters. You will be maintaining OH-58D Kiowa Warriors and AN-1 Cobras to outfit the rest of the units in the "10 active divisions + 15 enhanced brigades" Bottom-Up Review (BUR) force structure. How would the Army intend to deploy Apache battalions to support divisions committed to a Major Regional Contingency (MRC)?

Mr. DECKER. Due to the lethality of the Apache, the Army deploys its Apache battalions in the MRC scenario via a timed phased deployment that best supports the ground forces. Active duty Divisional Apache battalions are deployed with their organic divisions. The active duty Corps Apache battalions are used to support the theater attack helicopter requirements. Reserve component Apache battalions are used to backfill the Divisions or Corps they are habitually associated with or are used to fill theater shortfalls after the first 30 days of conflict.

Senator LEVIN. Did the BUR review analysis assume that deployed divisions would be equipped this way?

Mr. DECKER. Yes, the BUR portrayed 24 Apache equipped attack helicopter battalions, with one Armored Cavalry Regiment (ACR), containing one attack squadron for a total of 25 attack battalions/squadrons.

Senator LEVIN. Do you have enough Apaches to outfit battalions to support this plan? If not, are these divisions really deployable to an MRC?

Mr. DECKER. Yes, there will be 6 heavy Divisions containing 8 attack battalions, 4 Corps containing 11 attack battalions, the 101st Airborne (Air Assault) division with 3 attack battalions, the 3rd ACR with 1 attack squadron and two Reserve component attack battalions.

ABRAMS UPGRADE PROGRAM

Senator LEVIN. Last year, the Army testified that 120 M1A2 upgrades per year would be the minimum necessary to sustain the tank industrial base. This year, as I understand it, the Army's position is that the tank industrial base can be sustained with a production level of 90 or more upgrades per year. What caused the Army to downgrade its estimates by 25 percent?

Mr. DECKER. During the past year I directed a special team to review General Dynamics' assertions regarding the criticality of 120 per year. The team concluded that while a rate of 120 per year is desirable from an industrial and operational standpoints, it is not the absolute bottom line. Many vendors indicate 90 per year is their minimum requirement. In fact, production rates at 90 or lower are possible if we are willing to pay the price for identifying and requalifying new vendors.

Senator LEVIN. Do the program manager and program executive officer agree with these estimates?

Mr. DECKER. Yes. During the years of maximum Abrams production, for various reasons dozens of vendors left the "industrial base", and we have replaced them. We expect increased turmoil at rates of 90 to 120 per year, but we believe it is manageable.

Senator LEVIN. If 90 upgrades is the correct number, why does the Army's fiscal year 1997 budget support only 80 upgrades? Why does the Army consider that to be an executable program?

Mr. DECKER. We are addressing fiscal year 1997 and out production rates in our update to the fiscal year 1997 budget. We are investigating a number of cost savings initiatives to reduce the upgrade unit cost allowing us to increase the production rate within the current budget.

Senator LEVIN. In fiscal year 1993, Congress authorized the use of Foreign Military Sales receipts from M60A3 tanks to be used for the Abrams M1 upgrade program, and Congress appropriated funds for that purpose (PL 102-484, Sec. 114, and PL 102-396). The Fiscal Year 1993 Defense Appropriations Conference Report stated (page 89): "The conferees intend to make available similar receipts from future tank sales, as they become available, in future appropriations acts. I understand there would be at least \$47 million available in M60A3 FMS receipts for the Abrams upgrade program, if Congress were to appropriate the funds. Is it correct that these additional funds are available?"

Mr. DECKER. Yes, approximately \$51.3 million (of fiscal year 1994 FMS receipts from the sale of older (M60A3) tanks) is available.

Senator LEVIN. Could these funds help the Army close the funding gap to buy upgrades at a rate of 120 per year, and on a multiyear procurement basis?

Mr. DECKER. Yes, these funds could be used to increase the upgrade production rate. The fiscal year 1996 President's budget was submitted assuming a single year contracting strategy. Under a single year procurement strategy, the fiscal year 1996 funding provides 100 upgrades. The \$51.3 million of FMS receipts would increase the fiscal year 1996 single year rate to about 115 upgrades.

Additionally, the fiscal year 1996 budget preserves the option for a 120 per year multiyear program. Sufficient funding is provided in fiscal year 1996 for the initiation of up to a 120 per year multiyear procurement. Funding shortfalls in fiscal years 1997-2000, currently under review by the Army, need to be resolved to fully fund a multiyear. The \$51.3 million could be used as advance procurement for fiscal year 1997 to partially offset funding shortfalls.

Senator LEVIN. Does the Army support the use of these FMS receipts to help fund the M1A2 upgrade program at the desired level of 120 upgrades per year, or at some rate higher than currently budgeted?

Mr. DECKER. Yes, the Army desires to use FMS receipts to help increase the upgrade production rate, but only if this is not at the expense of funding for other Army programs.

Senator LEVIN. Is it correct that the Army prefers an Abrams upgrade program at a rate of 120 upgrades per year on a multi-year procurement basis?

Mr. DECKER. We desire an Abrams upgrade program at a 120 per year production rate. However, affordability drives us to fund a rate significantly less. We are investigating several multiyear procurement options, including one at a 120 per year rate. Our estimated cost savings from multiyear over single year procurement are substantial (in the range of 4.5 to 8 percent). However, we must weigh a decision for a long term commitment to a multiyear in today's funding environment against our other funding priorities. As we have not yet funded and proposed a multiyear as part of our recent budget submit, approval of a multiyear is problematic.

BRADLEY UPGRADE PROGRAM

Senator LEVIN. Over the past year, I have had serious reservations about the Army's plan for completing the subsystem work on the Bradley Upgrade Program. The Senate Armed Services Committee's Authorization Report last year required the Secretary of the Army to submit a report ensuring that the process for selection of subsystems would ensure fair and equitable treatment for all competitors. I understand that the prime contractor has awarded a few of the subsystem contracts, but that much remains to be done. I also understand that, in order to stay on schedule, preliminary design review must be completed by May of this year. Are you sure that the program remains on schedule and that other vendors are being given full opportunity to compete for the subsystem's work?

Mr. DECKER. The Bradley A3 Engineering and Manufacturing Development (EMD) program is on schedule for a First Unit Equipped date of fourth quarter fiscal year 2000. A reduction in the quantity of Low Rate Initial Production (LRIP) vehicles caused by increased unit cost of the Second Generation FLIR component changed the FUE from third quarter fiscal year 2000 to fourth quarter fiscal year 2000. Firm program definition and greater emphasis on definitization of subcontract requirements have moved the Preliminary Design Review (PDR) from May 1995 to July 1995. The Army's involvement in the overall subsystem source selection remains unabated, ensuring a level playing field for all offerors. United Defense has forwarded Request for Proposals (RFPs) to any offeror requesting one, and has not turned down the submission of a proposal for evaluation on any subsystem.

Senator LEVIN. The Bradley M2A3 upgrade program is being run as a sole source program with United Defense as the prime contractor. I understand that United Defense has selected Litton of Canada as the subcontractor to supply flat panel displays for the program.

Has the Army examined the question of whether Litton was able to underbid U.S. competitors because of Canadian Government subsidies to Litton (through the Defense Industrial Productivity Program)?

Mr. DECKER. For purposes of this competition, Litton was considered a domestic supplier as defined by the Defense Production Act, whose thrust was to stimulate the domestic (U.S. or Canada) industrial base for DOD programs procuring Active Matrix Liquid Crystal Displays (AMLCD). Litton of Canada is not subsidized by the Canadian Government. As part of the Defense Industry Productivity Program they have received long term, no interest loans for capital investment. Litton was selected as a subcontractor for the flat panel displays because they were judged to be the best value for procurement, cost and technical factors considered.

Senator LEVIN. If so, what is the Army's conclusion?

Mr. DECKER. As stated, Litton of Canada is not subsidized by the Canadian Government. The selection of Litton was based on best value for the product, not solely on cost factors.

Senator LEVIN. Is the flat panel display playing field level?

Mr. DECKER. The Request for Proposal for the flat panel display garnered responses from seven different contractors. An evaluation of technology, risk, cost and best value for the government determined that Litton offered the best value for the flat panel displays.

GOVERNMENT OWNED CONTRACTOR OPERATED (GOCO) FACILITIES

Senator LEVIN. I see that the Army's base closure list includes two Government-owned/contractor-operated, or GO/CO, facilities, the Stratford Army Engine Plant, and the Detroit Army Tank Plant. Some have charged that the Army was responding to criticism that Army had not closed enough infrastructure and that they needed to get more "clean kills" to add to their total. Others have charged that the Army wanted to protect tank gun mount work at Rock Island Arsenal and engine overhaul work at Anniston Army Depot by killing their only competition.

How do you answer charges by these critics that the Army was merely trying to protect full employment at its own arsenal and depot structure by proposing the two GO/CO facilities on the closure list?

Mr. DECKER. The Army was not trying to protect full employment at its own arsenal and depot structure as implied by unnamed critics. Both the Stratford Army Engine Plant and the Detroit Tank Plant were recommended for closure based upon installation military values, Army requirements for the products produced at each facility, the Army Stationing Strategy, and projected worth of the individual facility as the Army moves into the 21st century.

The Detroit Tank Plant has ceased to produce new M1 tanks of any model. All current tank production is being done at the GO/CO facility located at Lima, Ohio. The facility at Lima is technologically superior to the Detroit facility, is newer,

facilitized for M1A2 production, and like Detroit, is a GO/CO operated by General Dynamics Land Systems. The Army Stationing Strategy calls for the elimination of duplicate facilities. The Detroit facility is doing limited tooling for the M1A1 upgrade program and produces approximately 50 percent of the Army's gun mount production.

The gun mount production split between the Detroit Tank Plant and the Rock Island Arsenal was brought about as part of a political decision to keep work in a Michigan facility as well as an Illinois facility. Cost was not a major decision factor as the products are produced at similar prices.

The Stratford Army Engine Plant is a production facility and not a rebuild plant. Sustainment of the heavy combat vehicle fleet, users of the AGT 1500 turbine engine, is the mission responsibility of the Army depot structure. Present Army inventory of AGT 1500 engines is more than adequate to support the needs of the vehicle fleet. There are no future procurement actions for either U.S. or foreign military customers. Army requirements are not such that two rebuild facilities are supportable or practical. It is a point of consideration of Allied Signal to move the remaining Stratford operation to another of their facilities in the west. Granted, the technology for "rebuild" is readily available at Stratford just as production can be accomplished at Anniston based upon spare parts availability.

As for "clean kills", the Army has no such objective. What the Army did have as an objective was to size to an infrastructure that would meet the operational requirements of the 21st century and beyond for the Army and at a price that was both affordable and in the best interest of the United States of America.

TRUCK MODERNIZATION

Senator LEVIN. The Army's truck modernization plan last year did not include sufficient investment to preclude a significant aging of the overall truck fleet during the planning period. Someone once said that "amateurs talk about tactics, experts talk about logistics." In the Army, one cannot talk about logistics without talking about the truck programs. I have seen how important having a modernized truck fleet is to the Army's concept of maneuver warfare.

This year, the Army's truck program is effectively dead. The only funds in the family of medium tactical vehicles (FMTV) line is for cancellation of the multiyear contract.

How can the Army hope to maintain a force capable of conducting rapid mechanized advances and minimize friendly casualties when the Army budget would allow the linchpin of supporting such advances, tactical wheeled vehicles in general, and FMTV in particular, to deteriorate so dramatically?

Mr. DECKER. The Army has developed an investment strategy that provides for a combination of remanufacture and new procurement. This strategy provides the Army with the ability to continue truck modernization in this period of constrained resources. As the Army refines its budget for fiscal year 1997 and beyond, the investment strategy will be resourced within the funds available. As presently programmed in the Future Years Defense Plan (FYDP) 1996-2001, we will see some continued deterioration in the overall truck fleet, particularly the medium truck fleet.

Senator LEVIN. I understand that the Army is reviewing an industry proposal that would help the Army modernize a portion of its light truck, commercial utility cargo vehicle (CUCV) fleet on a trade-in and lease basis. There is reason to believe that this proposal would result in substantial OMA savings, thus generating funds for the lease. Does the Army view this proposal on CUCV as a constructive and innovative way to help the Army with its truck modernization concerns?

Mr. DECKER. The Army has received informal information and briefings from General Motors on a CUCV lease proposal. The proposal appears to have merit and warrants further study.

Senator LEVIN. What steps would be necessary to implement the CUCV proposal?

Mr. DECKER. There are some legislative initiatives required to enable this concept. When the Army finishes its further study, which will include prioritization of the CUCV's (which may not have the higher priorities of our tactical vehicles), we would propose such legislation if we were to proceed with the program.

SYSTEMS FOR PEACEKEEPING

Senator LEVIN. I know that many of us have been interested in the way that the services are preparing to deal with the likely missions that face DOD today and will confront DOD in the future. In particular, I am thinking of such operations as peacekeeping, peace enforcement and other, less-than-traditional missions. Such task as crowd control, water purification, and mine clearance come to mind. Could

you describe how the Army acquisition program supports the need to be able to deal with such non-traditional missions and operations other than war?

Mr. DECKER. The Army has shaped its acquisition program to best meet the overall requirements of the National Military Strategy, not just the execution of two near-simultaneous major regional contingencies. Humanitarian operations and additional operations other than war are an integral part of that strategy. As a result, the Army has taken a number of doctrinal and training actions over the last 2 years to prepare for such missions. Results indicate that a number of our smaller programs which are required for combat operations are also critically required for operations other than war. Thus, no major changes in acquisition base requirements are needed. We just cannot afford to decrement our critically identified smaller programs any further.

[Whereupon, at 10:48 a.m., the subcommittee was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1996 AND FUTURE YEARS DEFENSE PRO- GRAMS

WEDNESDAY, MARCH 29, 1995

U.S. SENATE,
SUBCOMMITTEE ON AIRLAND FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

TACTICAL AVIATION ISSUES

The subcommittee met, pursuant to notice, at 2:37 p.m., in room 222, Russell Senate Office Building, Senator John Warner (chairman of the subcommittee) presiding.

Committee members present: Senators Warner, Kempthorne, Inhofe, Santorum, Levin, and Lieberman.

Committee staff members present: Richard L. Reynard, staff director; and Christine K. Cimko, press secretary.

Professional staff members present: Romie L. Brownlee, Stephen L. Madey, Jr., and Steven C. Saulnier.

Minority staff member present: Creighton Greene, professional staff member.

Staff assistants present: Shelley G. Lauffer, Connie B. Rader and Jason Rossbach.

Committee members' assistants present: Judith A. Ansley, assistant to Senator Warner; Richard F. Schwab, assistant to Senator Coats; Glen E. Tait, assistant to Senator Kempthorne; Matthew Hay, assistant to Senator Inhofe; Patricia L. Stolnacker, assistant to Senator Santorum; Andrew W. Johnson, assistant to Senator Exon; Richard W. Fieldhouse, assistant to Senator Levin; Steven A. Wolfe, assistant to Senator Kennedy; Suzanne M. McKenna and John P. Stevens, assistants to Senator Glenn; and John F. Lilley, assistant to Senator Lieberman.

OPENING STATEMENT OF SENATOR JOHN WARNER, CHAIRMAN

Senator WARNER. The committee will come to order. I do not know exactly when Senator Levin and the ranking members will arrive, so we will proceed with the hearing, and we will ask General Blot to lead off.

**STATEMENT OF LT. GEN. HAROLD W. BLOT, U.S. MARINE
CORPS, DEPUTY CHIEF OF STAFF FOR AVIATION**

General BLOT. Thank you for the invitation to come, Mr. Chairman. I appreciate always the opportunity to appear before this committee. I have submitted a written response to the questions that covers the issue.

Senator WARNER. We will include in the record in entirety the statements of each of the witnesses.

General BLOT. Thank you very much, sir. I am prepared to answer any questions. There is only one item I would like to bring to the committee's attention and that is, the Marine Corps is exactly the same as it was last year, and your support in what we wanted to do has helped us through this time.

There is only one thing we have changed, and that is last year we were intending to proceed towards a program called VMAO, which was a replacement for our COBRA gunship and Huey utility helicopter.

We have looked at that program and have determined that that is not affordable in a timeframe and, therefore, have essentially moved it out to the 2015 time, which now means that we have to come up with a plan to make both the COBRA and the Huey last until that timeframe.

We are working with Admiral Bennitt on a program that looks like it may do that—where we take a four-bladed system, they are presently two-bladed, convert the COBRA over and that reduces the stresses on it to where the lifespan is there. It adds performance, so it is a usable airplane in that timeframe. Then, if we can do it, lift that entire system—engines, transmission, rotor system, tail rotor—onto the Huey, so that both airplanes are virtually identical.

We only have to pay for it one time, and then we can extend the life of both airplanes and have performance of both airplanes to get us out a considerable time in advance. We think that is a pretty exciting program, and we are trying to determine how we can fit it in right now, sir.

Senator WARNER. That is the entirety, then, of your program, other than what is covered in your statement, that you wish to address?

General BLOT. That is correct, sir.

Senator WARNER. All right.

[The prepared statement of General Blot follows:]

PREPARED STATEMENT BY LT. GEN. HAROLD W. BLOT, USMC, DEPUTY CHIEF OF
STAFF FOR AVIATION, HEADQUARTERS, U.S. MARINE CORPS

INTRODUCTION

Mr. Chairman and distinguished members of the subcommittee, I thank you for the opportunity to appear before you to discuss Marine Corps Tactical Aviation and to articulate our plan for aircraft procurement in fiscal year 1995. Our portion of the Presidential Budget request balances procurement of combat-proven weapons systems with the upgrading of existing systems for economy, while developing new technologies to fight on and above tomorrow's battlefields.

The end of the Cold War may have changed life for some in the business of national defense, but the Marine Corps' daily tasks have altered little. You see proof of this in the way in which—and the tools by which—your Corps operates. In short, we're still the same "Force in Readiness"—popularly coined today as the Nation's "911 Force"—that this Congress prescribed in law over four decades ago—albeit a

little smaller, a little leaner and—as a result, a little busier. Nothing about the historic closing of the Cold War did anything to alter the enduring wisdom of the 82nd Congress. Deterrence of aggression, peacekeeping, containment of regional conflicts, assistance in international drug interdiction, humanitarian assistance, and domestic emergency relief are continuing demands. The Marine Corps has been mandated by Congress to be “the most ready when the Nation generally is least ready”—and the Marine Corps carries that weighty responsibility proudly. The Marine Corps is foremost an expeditionary force-in-readiness and provides a unique capability that combines air, land, and naval forces from the sea—the Marine Air-Ground Task Force. In preparing Marine Corps Aviation for its future missions, we recognize the need to retain capability and credibility across the full spectrum of deployments and possible contingencies by striving to maintain the combat advantage generated by superior mobility, flexibility, lethality, and speed.

As we concentrate on achieving a high return for our investment dollars, notable trends in Marine Corps Aviation activities in the fiscal year 1996 budget requests include:

MV-22 (OSPREY). The MV-22 is the Marine Corps replacement for the aging CH-46E and CH-53D medium lift assault force. The MV-22 is a tilt-rotor aircraft capable of carrying 24 combat equipped marines or a 10,000-pound external load. Cruising at 250 knots with worldwide self-deployability (2,100 nautical miles with one inflight refueling), the V-22 will enhance rapid response and force closure. The V-22 will be the cornerstone of the Corps' assault support force in the 21st century. It will provide the Marine Air Ground Task Force with a assault support aircraft possessing the speed, endurance, combat radius, payload, survivability, and maneuver warfare characteristics needed to fight and win on tomorrow's battlefield. The latest Cost and Operational Effectiveness Analysis (COEA), which incorporated maneuver warfare on a joint battlefield, once again validated the V-22 as the most cost and operationally effective alternative for the Marine Corps medium lift mission. This was the seventh separate COEA to be conducted—and the seventh time V-22 came out as the best answer. In August 1994, the Joint Requirements Oversight Council (JROC) under the Vice Chairman of the Joint Chiefs of Staff (VCJCS) found commonality between the Marine Corps medium lift requirement and U.S. Special Operations Command (USSOCOM) requirement for a long range special operations aircraft. Approval of a Joint U.S. Marine Corps, U.S. Navy, and U.S. Special Operations Command Operational Requirements Document (ORD) is anticipated shortly. In December 1994, the Office of the Secretary of Defense (OSD) approved the continued development and production of the baseline MV-22 and CV-22 variant aircraft to meet the common requirements of the Marine Corps and USSOCOM. The first Low Rate Initial Procurement (LRIP) lot of four Marine MV-22 aircraft is scheduled for Long Lead funding in fiscal year 1996 with procurement funding beginning in fiscal year 1997. Deliveries will begin in fiscal year 1999 and be completed in fiscal year 2003. MV-22 procurement remains the number one acquisition priority of not only Marine Aviation, but also of the entire Marine Corps.

AV-8B (Harrier) Remanufacture. The AV-8Bs Short Take Off/Vertical Landing (STOVL) design gives it the capability to operate from a variety of land and sea-based areas. The AV-8B will remain in service until introduction of a replacement aircraft after 2010. Current production AV-8Bs are built to the radar night attack standard, which incorporates an improved engine, night warfighting capabilities, and the APG-65 multimode radar. The Marine Corps is pursuing a remanufacture program in which 72 of its older “day attack” aircraft will be rebuilt to the current radar/night attack standard at only 80 percent of the cost of a new aircraft. The MAGTF has limited organic artillery and tanks and relies heavily on its complementary aviation assets to provide required fire support. The STOVL capability of the AV-8B is well suited to the needs of expeditionary forces, both ashore and from the sea. The addition of night attack and radar capabilities will allow the AV-8B to be responsive to the needs of the Marine Air Ground Task Force for expeditionary night and adverse weather offensive air support. Sixty day attack aircraft are programmed to be remanufactured through fiscal year 2000. Twelve additional aircraft are required to be remanufactured in fiscal year 2001.

CH-53E (Super Stallion). In the 1995 Defense bill, the 103rd Congress provided the latitude and flexibility to use funds appropriated to procure CH-53E heavy helicopters in lieu of terminating the production. Your foresight allowed us time to review our heavy helicopter requirements in 1995 vice forcing us to close America's only heavy helicopter production line. As authorized in the 1995 bill, we have elected to buy two additional CH-53Es and preserve this valuable industrial base. We are evaluating alternatives to keep the line open at a small production rate to procure enough CH-53Es to outfit our two Reserve heavy lift units.

AH-1W (Cobra) Mid-Life Upgrade. The AH-1W Super Cobra is a two place, tandem seat, attack helicopter. The aircraft is capable of carrying a versatile mix of ordnance which includes: Hellfire, TOW, Sidewinder, Sidearm, 20mm turreted gun, and assorted forward firing rockets and external ordnance. The aircraft's missions include: Enroute escort and protection of troop carrying assault helicopters, landing zone preparation and fire suppression, anti-armor and anti-helicopter defense, and command and control of supporting arms. The AH-1W is scheduled to remain in service until 2020. A three phase mid-life upgrade is planned. Phase I of the upgrade is currently in progress. It includes installation of the Night Targeting System (NTS) into all aircraft, providing each with the capability to fight at night and in marginal or adverse weather. Phase II entails installation of the Integrated Weapons System which enables the aircraft to be fought equally from the front or back seat. Phase II corrects long-standing safety deficiencies by digitizing the cockpit, thereby reducing pilot workload and improving battlefield situational awareness. Installation of a four-blade main rotor system to replace the existing two-blade system could be Phase III of the Mid-Life Upgrade, although no funds for this effort are being requested in fiscal year 1996. If we subsequently validate the operational requirement for a four-blade main rotor system, then we will include this upgrade in our fiscal year 1997 budget request.

UH-1N (Huey) Mid-Life Upgrade. The UH-1N is a two-place, side-by-side combat utility helicopter. Its primary mission is airborne command and control. Additional missions include control of supporting arms, medical evacuation, maritime special operations troop insertion/extraction, and search and rescue. Like the Cobra, the UH-1N is scheduled for a phased Mid-Life Upgrade. Phase I incorporates new communications and navigation equipment to include GPS/INS, lightweight TACAN, a digital moving map display, satellite radios, and a navigational forward looking infrared (FLIR) system. These Phase I modifications will conclude with installation of an integrated cockpit. Phase II of the upgrade corrects safety and performance deficiencies by installing a four-blade rotor system. Current funding supports off-the-shelf procurement of commercial components to accomplish Phase II. However, an ongoing cost and operational effectiveness analysis should verify and validate the potential savings and performance that could be achieved by installing the same dynamic components, power train, and rotors that may be used to achieve Cobra upgrades. This initiative has been identified as the 4BW/4BN (Four Bladed AH-1W/ Four Bladed UH-1N). If savings and performance are validated by the completed COEA, these modifications may be included in our fiscal year 1997 budget request.

CH-46 Upgrade. The CH-46 upgrade consists of two programs. The first is the Dynamic Component Upgrade (DCU), the second is the Service Life Assessment Program (SLAP). The DCU is a 4-year funded safety of flight program that replaces the dynamic components in the flight control system, drive train, and rotor system. This upgrade does not enhance the performance of the aircraft, but returns the performance of the CH-46 to its original characteristics. The upgrade replaces aging components that do not have the service life or performance characteristics to allow the aircraft to complete the assault support mission. The SLAP is an assessment of the airframe and aircraft components and will define the necessary maintenance required for the CH-46 to meet mission requirements until it is replaced by the V-22.

Joint Advanced Strike Technology (JAST). The ASTOVL variant of JAST is critical to Marine Aviation's long range plan. The Marine Corps depends heavily upon the use of integrated air in its combined arms scheme of warfare. This, in turn, has allowed us to radically reduce our dependence upon armor and artillery, and in so doing, has helped ensure that we have the strategic mobility necessary to be the "Nation's 911 Force".

We have to be able to base as far forward as required to get the job done for our ground combat forces. The net result of being close can be measured two ways: decreased response time and increased sortie generation. Thus, Marines fly from amphibious decks operating close to shore and will operate from captured or damaged airfields, or when needed, on highways in battlefields of the future. In Desert Storm, the STOVL properties of the Harrier allowed us to 'shoehorn' 86 more tactical aircraft into theater when there was no room at traditional airfields. We did this when we flew 60 aircraft from a soccer stadium and based 20 more aboard the U.S.S. *Nassau* and six aboard the U.S.S. *Tarawa*. These aircraft were able to reduce close air support response time to seven minutes—from receipt of the frag request to bombs on target!

JAST/ASTOVL will allow innovative ways to support our forces ashore without restricting the CINCs' courses of action. Because they can launch and recover from almost anywhere, we can originate a mission from sea bases, rearm and refuel it

from a forward site, and return it to its sea base, or we can phase it ashore as necessary.

To maintain our warfighting requirement, and modernize the force, we will need to begin replacing our current structure with ASTOVL, beginning about 2007 to 2010. We plan to replace both the AV-8B and the F/A-18 with ASTOVL. The aircraft will be innovative in that it will merge the latest in aircraft technology with the capability to land anywhere. This will complete the 'neckdown' plan we embarked upon in the late 1970s; a plan to achieve efficiencies by relying upon fewer, but more capable type/model/series.

Advanced Tactical Air Reconnaissance System (ATARS). The Advanced Tactical Air Reconnaissance System (ATARS) provides a capability for transitioning to digital, real-/near-real-time tactical reconnaissance, and is presently the only funded tactical system under development in DOD. It will provide a near term, responsive, manned penetrating tactical reconnaissance capability in Marine Corps F/A-18Ds for sea or expeditionary land-based operations. The reconnaissance-capable F/A-18D(RC) will be equipped with ATARS and the APG-73 upgraded radar. The F/A-18D Night Strike Fighter is a two-seat, supersonic, multi-mission aircraft which replaced both the RF-4B and A-6E. ATARS is a self-contained, palletized reconnaissance sensor suite containing three electro-optical/infrared sensors and associated electronics and recorders. Low and medium altitude electro-optical sensors provide dawn-to-dusk high-resolution, vertical or oblique imagery. An infrared line scanner provides day or night, high-speed, low altitude, high-resolution infrared imagery. The Phase II upgrade to the APG-73 radar will provide high-resolution ground maps. The upgraded APG-73 is capable of gathering both wide-area coverage (10nm-wide strip) and point-target (small area spot) reconnaissance imagery during all-weather conditions. A data link, now under development, will allow aircrew to transmit imagery to a ground-based image processing station while returning to home base. The Marine Corps' acquisition objective is to field 31 ATARS suites which will be distributed among its six F/A-18D squadrons. The Initial Operational Capability (IOC) will be achieved during fiscal year 1998, with a Full Operational Capability (FOC) slated for all six squadrons by fiscal year 2001.

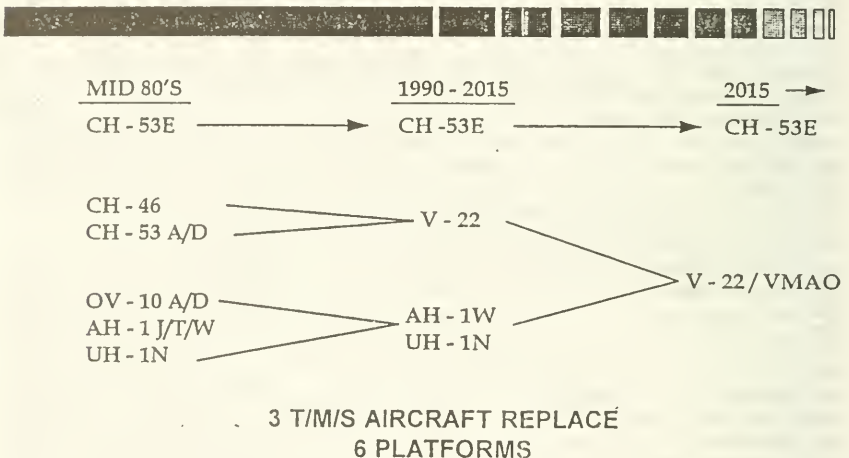
EA-6B (Prowler). Since WW II and the large scale introduction of electronics for military use, Marine Corps Aviation has recognized the need for our Nation to lead the way in electronic warfare and controlling the electromagnetic spectrum. From the beginning, the Marine Corps has recognized the urgency to develop tactics and set apart resources to meet this rapidly developing area of combat. The first electronic warfare aircraft to be built "from the ground up"—was our own EA-6A "Electronic Intruder" of the mid-1960s. Today we have our combat proven Marine Tactical Electronic Warfare Squadrons (VMAQ) equipped with EA-6Bs. To maintain a viable platform through the year 2015, the Marine Corps is pursuing, in concert with our Navy counterparts, a two step approach. Our first priority is to address the structural and supportability problems associated with our aging EA-6B fleet. This includes the integration of numerous avionics upgrades for improved safety of flight, reliability/maintainability, and joint interoperability. With this complete, we would begin an incremental approach to upgrading the warfighting capability of our Prowlers.

Joint Munitions. Joint munitions provide the warfighting CINC increased operational flexibility. This flexibility is realized through the enhanced ability to provide sufficient munitions to maneuver forces within a theater, where and when needed. A key lesson learned from Desert Storm was the requirement for joint interoperable weapons which would reduce the logistics burden of supplying and distributing service-specific weapons in theater. Interoperable munitions facilitate operational effectiveness by increasing the total quantity of munitions available and reducing transportation and storage requirements. I believe that future aviation munitions should be interoperable, where operationally and fiscally prudent.

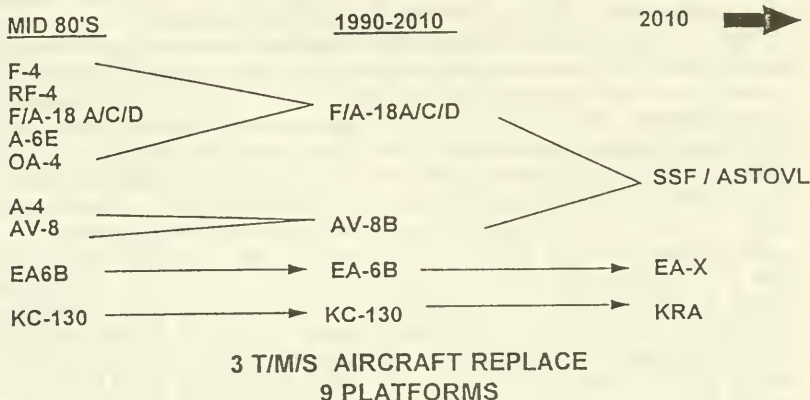
Advanced Munitions. Like Joint munitions, advanced munitions are very important to the Marine Corps. The Joint Direct Attack Munition (JD) and Joint Standoff Weapon (JSOW) provide USMC aircraft with a needed standoff capability, increased accuracy, and enhanced lethality. However, all existing weapons programs should not be terminated. It should be remembered that about 85 percent of targets are not likely to require precision advanced munitions. Many targets, especially area targets such as maneuvering troops and armored vehicles or units under cover and concealment, must be attacked by area weapons under the direction of a Forward Air Controller (either airborne or with friendly ground units). Also, we need to maintain the manufacturing base of the current key weapons programs during the transition in order to mitigate the risk of having insufficient inventory in the event major contingencies occur before we acquire adequate stocks of advanced munitions.

Marine Aviation's 3-Pronged Strategy: Marine Aviation plans to help move the Corps' Air-Ground Team into the 21st century through a three-pronged strategy of procurement, upgrading, and development. The Marine Corps views readiness as the synergistic result of many elements, one of which is procuring combat-proven weapons systems for our marines. The previously mentioned AV-8B Remanufacture is an example of this approach. Also in the budget are 12 F/A-18 C/Ds for the Navy/Marine Corps team. These Hornets will aid the Corps in continuing its TACAIR modernization strategy into the 21st century. Second, the Corps continues to save taxpayer dollars by upgrading systems like the AH-1W and UN-1N. Third, new technologies currently under development, such as ATARS, the MV-22, and JAST/ASTOVL are the tools of America's future battle spaces. The three-pronged strategy dovetails with our long-embraced "neck down" of aircraft platforms (see enclosures).

ROTARY WING "NECKDOWN" STRATEGY



FIXED WING "NECKDOWN" STRATEGY



The present problem is: how can we render the same quality of service that our infantry brethren have come to expect in the current era of fiscal austerity? Efficiency is the key. We embarked upon a course of action about 10 years ago which reduces type/model/series, infrastructure, and total airframe requirements by replacing them with fewer, but more capable, aircraft. We call this "necking down." In the attack-fighter community, we have gone from an inventory of A-4s, AV-8s, and F-4s to a fleet of F/A-18s and AV-8Bs. We also necked down from 105 RF-4s, OA-4s, and A-6s to 72 F/A-18Ds. As a Corps, we want to see the process culminate in the advanced short takeoff, vertical landing strike fighter (ASTOVL) which will replace F/A-18 C/Ds and AV-8Bs. A later development program will address a replacement for the UH-1N and AH-1W in the post-2020 era.

CONCLUSION

Our fiscal year 1996 budget requests represent a long range investment strategy designed to provide highest possible combat readiness within resource constraints. The plan focuses on the most urgent equipment modernization and sustainability requirements. As the Nation's premier expeditionary force in readiness, the Marine Corps stands ready to protect American interests, influence, and ideals. As we have always done, we will accord first priority to our operating forces with the objective of assuring their success on the modern battlefield while conserving our most treasured resource—our marines and sailors.

With your assistance, Marine Aviation will remain the ready, relevant, and capable force multiplier that helps to make the Corps a model of joint efficiency and effectiveness. We are ever mindful that our success is found in the synergy of the Air-Ground Team and in the courage, honor, and commitment of the individual marine. We will continue to wisely invest the tax dollars that you entrust to us, giving America a Corps of Marines that comes quickly when called and wins—every time—in any clime and place. On behalf of marines everywhere and of our Commandant, I thank you again, Mr. Chairman, for permitting me to speak to you today, and I thank you, as well, for the steadfast faith that your committee places in us.

Senator WARNER. General Muellner.

STATEMENT OF MAJ. GEN. GEORGE K. MUELLNER, USAF, DIRECTOR, JOINT ADVANCED STRIKE TECHNOLOGY PROGRAM

General MUELLNER. Yes, sir. I appreciate this opportunity to update the committee on the JAST Program. Since the statement has been read into the record, I would like to present one chart to highlight how the program has really narrowed its focus through a lot of coordination with the services and with industry.

The current focus of the JAST Program in meeting the needs of all three of the services shown here is in producing a family of airplanes, not a single airplane to meet the needs of all three services, but a family with about 70 to 90 percent commonality across that family to meet the needs of the three services depicted. This enables a single production line, single support trail, and it looks like it can bring us back anywhere from a 33 to about a 55 percent life-cycle cost savings. That is the current focus of the program.

Sir, what I would like to do now with your permission is answer the four questions which your staff sent over to us. The first of these is the impact of the fiscal year 1995 cuts. Those cuts to the program amounted to about \$65 million, about a 32 percent reduction, and they impacted us in two areas. One is a reduction in the scope and the extent of industrial participation in the program, and I will elaborate on that. The second is elimination of a number of technology programs that showed positive rate of return and showed a way to reduce life-cycle costs that we just could not afford to demonstrate.

On the contractor activity, we had to reduce our prime contractor's engineering activity during the concept definition phase which they have now entered. That was reduced as was some engineering support work which reduced by about \$6.5 million their wind tunnel activity. The end result of that is that we will have less definition of the recommended system concepts and a little less data to support the contractor's assertion. So there is a little more risk going into the next demonstration phase.

On the technology side, there were really six separate programs, and I will just highlight them at a high level, that we had to eliminate. These all showed to have positive return for our investment, but we just did not have the investment dollars: One was a program to look at F-22 software use; the second was a computational fluid and AMEX program that would have reduced the cost downstream of integrating new weapons onto the weapon system; and the third was a further evaluation of tailless flight.

We are looking very seriously at building an aircraft that would not have a vertical stabilizer, a vertical tail on it, a significant reduction on weight and drag and improves your signature also. But there are a lot of questions that have to be asked, and we had to forego some evaluation of that. We also had to forego the development of an internal engine rear frame augmentor.

What this would do is allow the engine itself to lower its radar signature such that it would not present such a large radar return. We also had several reductions in the area of LO materials repair under austere conditions such as would be found aboard ship or in a Marine Corps environment. We had to forego those for the near term.

The end result of all of those was probably a slight increase in the overall cost of the weapon system downstream because of deferring these life-cycle cost savings and also some increased risk to the next phase of the program.

Sir, the second question that was presented was our assessment of our ability to meet the "high-end" Navy requirement for long-range survivable strike fighter. The specific tasking that the Navy asked us to fill was as shown on this slide, which is a first day of the war survivable strike fighter to complement the EF in the out-years on their decks. We are absolutely convinced we are going to be able to deliver this.

The likely characteristics of the aircraft that we are focused on include the capability to carry two precision air-to-ground weapons, and two air-to-air missiles in a stealthy configuration. This will provide both a survivable and a precision weapons delivery capability to the Navy in the early days of a campaign.

Additionally, later in the campaign when the threat has been denigrated, you can externally load the aircraft and use it as a truck so it can continue to make significant contributions to the campaign. Right now, the range characteristics of this aircraft should allow to cover the majority of the targets on the battlefield of the future unrefueled.

Now, I am not really sure what the term "high-end" means. But right now our analysis indicates that this capability I have described can be produced for less than \$40 million a copy within the context of the JAST Program framework, i.e., that family of airplanes that you saw in the earlier chart.

The next question that the committee presented was to identify what the near term milestones are, particularly those that lead to a clearer definition of what will be produced.

In reality there are two that will occur this year. The first of these is, as you can see up in the corner of our schedule, where the services will provide the Joint Mission Need Statement to the Joint Staff, the Joint Requirements Oversight Council for validation.

The second, which is down below that, is the specific concept definition work that is underway by all of our prime contractors. By this fall—that is, by the November timeframe—I think we will have a very clear definition of what their preferred system concepts would be. So we will be able to directly compare that with the Mission Need Statements. I am confident that we can adequately describe the weapon system at that point in time.

Finally, the last question that was raised—what are the specific technical challenges associated with providing commonality between the Air Force and the Marine Corps requirements? To begin with, since all of the services really need an air-to-ground multirole aircraft, the challenge here is primarily driven by the need of that Marine Corps asset to operate off of the LHA/LHD category ships.

The need for the short takeoff vertical landing really requires the weapon system weight be minimized and the propulsive lift or propulsion output be maximized. The majority of the technical risk we have right now in the program is in the propulsion side of that challenge of dealing with the propulsive lift systems for the vertical landing.

Recognizing this, we have got all three of the various concepts for the propulsive lift approach in large scale demonstration this year. And so by next year, when it comes time to move into a concept demonstration phase, we will have real-world, large scale data, I think, that will allow us to adequately address, rather, the challenges that remain and also the cost of meeting those challenges.

Sir, that concludes the four questions, and I will be glad to answer any other questions at the end.

Senator WARNER. Mr. Levin, do you have any comments by way of opening remarks?

Senator LEVIN. Just briefly. This is a critically important hearing, Mr. Chairman. As you know better than anyone else, we have spent many years looking at the TAC Air issues that we face, the modernization efforts, and the frustration of those efforts. There are many major questions which are being addressed today. I do not know of any more important subjects to come before this subcommittee than the TAC air modernization issues. I join you in your determination to continue to try to make progress.

Senator WARNER. Well, I did not say anything waiting for you to arrive, but that reflects basically my view on this. Since Senator Levin and I have been here, and this is our 17th year working on this subject and I had a few years before that in another position to work on modernization of aircraft, JAST may be the one bright star.

Otherwise, when you stop to think of the magnificent technical infrastructure in this country, really the strong backing given by the American taxpayer to modernization of the Armed Forces, in particular tactical aviation and the cost of the infrastructure that we have invested—I mean, aircraft carriers to airfields to the training of aviators—I would be less than candid if I did not say that, overall, I do not see what we are doing in your area as matching these three other major commitments that I have just outlined.

I wish that the Navy were well along with another version than going back and reworking an old one, and so forth, but we will get to that. I just hope that you feel in JAST, which does offer some hope, that you are getting the full cooperation of the services. You can address that when we come to the question of the program.

Admiral Bennitt?

[The prepared statement of Major General Muellner follows:]

PREPARED STATEMENT BY MAJ. GEN. GEORGE K. MUELLNER, U.S. AIR FORCE, JOINT
ADVANCED STRIKE TECHNOLOGY PROGRAM DIRECTOR

INTRODUCTION

Mr. Chairman and distinguished members of the subcommittee, I appreciate your invitation to present the Joint Advanced Strike Technology Program. I will highlight the key features of the program and indicate how this program is developing an affordable solution to meet the next generation strike warfare needs of the Navy, Marine Corps and the Air Force. The specific focus of the program is on affordably meeting the services' next generation strike warfare needs by significantly reducing the development cost, production cost and cost of ownership of these next generation weapon systems.

PROGRAM GENESIS

The Joint Advanced Strike Technology Program was created as an outcome of the Secretary of Defense's 1994 Bottom-Up Review. The Bottom-Up Review identified that the services' proposed modernization plans for the strike warfare mission area

were not affordable within the projected budget, and that the cost of replacing the strike warfare capability that was aging out of the inventory had to be reduced.

Consequently, the Joint Advanced Strike Technology Program was chartered with the mission shown in figure 1, to create affordable strike warfare systems. The program facilitates the evolution of fully validated, affordable operational requirements by the services. The Joint Advanced Strike Technology Program is also tasked to demonstrate technologies and operational concepts that are leveraging to both maintaining our technological superiority and reducing cost. These actions are necessary to support the successful development and production of affordable next generation strike aircraft weapon systems for the Navy, Marine Corps, Air Force and our allies.

Figure 1

THE JAST MISSION

CREATE

AFFORDABLE STRIKE WARFARE SYSTEMS

by

- FACILITATING DEVELOPMENT OF FULLY VALIDATED AND AFFORDABLE OPERATIONAL REQUIREMENTS
- FACILITATING MATURATION OF LEVERAGING TECHNOLOGIES
- DEMONSTRATING LEVERAGING TECHNOLOGIES (PRODUCTS AND PROCESSES) AND OPERATIONAL CONCEPTS

ENABLE SUCCESSFUL DEVELOPMENT AND PRODUCTION OF NEXT GENERATION STRIKE WEAPON SYSTEMS FOR THE USN, USMC, USAF, AND OUR ALLIES

The program is chartered under the signatures of the Secretary of the Navy, Secretary of the Air Force, and the Deputy Secretary of Defense. The program is jointly manned, and currently directed by an Air Force Major General reporting to the Navy Service Acquisition Executive. My deputy is a Navy Admiral who will take over the program when I leave and who will then report to the Air Force Acquisition Executive. These actions have ensured strong program support from both Departments.

Due to the structural age-out of the F-14 and the F-16 and the expected attrition of the AV-8B, the Joint Advanced Strike Technology Program is designed to support transition to Engineering and Manufacturing Development in about the year 2000 for new strike aircraft weapon systems to be fielded in the 2010 timeframe. Figure 2 summarizes the service mission needs being addressed by the Joint Advanced Strike Technology Program.

Figure 2

SERVICE NEEDS

- USN
 - FIRST DAY OF WAR, SURVIVABLE STRIKE FIGHTER AIRCRAFT TO COMPLEMENT THE F/A-18E/F
- USAF
 - MULTIROLE AIRCRAFT (PRIMARY AIR TO GROUND) TO REPLACE THE F-16
- USMC
 - ASTOVL AIRCRAFT TO REPLACE THE AV-8B AND F/A-18

JOINT ADVANCED STRIKE TECHNOLOGY PROGRAM STRATEGY

In designing the Joint Advanced Strike Technology Program, we applied recommendations voiced by the Packard and Carnegie Commissions and other experts on Acquisition Reform. We created an environment that provides early interaction between the warfighter and developer to insure cost vs. performance trades are made early when they can most influence weapon system cost. Our strategy recognizes that key technologies must be adequately demonstrated before entering Engineering and Manufacturing Development in order to reduce development risk and control cost. We also understand that if we are to significantly reduce the cost of our weapon systems, we must learn from the commercial sector and apply technologies that are specifically aimed, at reducing cost as well as increasing performance. Finally, we have been challenged by the Deputy Secretary of Defense to be the catalyst in implementing acquisition reform and streamlining within the aerospace industry.

PROGRAM PROCESS AND FOCUS ON AFFORDABILITY

Figure 3 illustrates the overall process. The Joint Advanced Strike Technology Program's primary unit of decisionmaking and authority are integrated product teams of warfighters and developers. These teams use the disciplined strategy-to-task process, depicted in figure 4, to evaluate joint strike warfare needs and optional solutions to meeting those needs. I would like to point out that industry is a full participant on these teams and their response has been overwhelmingly positive. We are through the "task" level and are working on identifying warfighting "deficiencies". We have run two Major Regional Conflict campaign level simulations with a third scheduled for next month. Over 90 representatives from government and industry participated in these exercises. An unprecedented amount of Modeling, Simulation and Analysis is being used in this process. We have identified and are using 11 operational/logistics models which simulate joint warfighting capability. We are the Verification, Validation and Accreditation sponsor for these models and will put in place an agreed to, joint service Modeling, Simulation and Analysis framework for future strike warfare assessment. We are well on the way to developing a Joint Mission Needs Statement this summer. Our success in this area led to the Defense Manufacturing Council designating the Joint Advanced Strike Technology Program as the Modeling, Simulation and Analysis benchmark for future acquisition programs.

Figure 3

JUST PROCESS

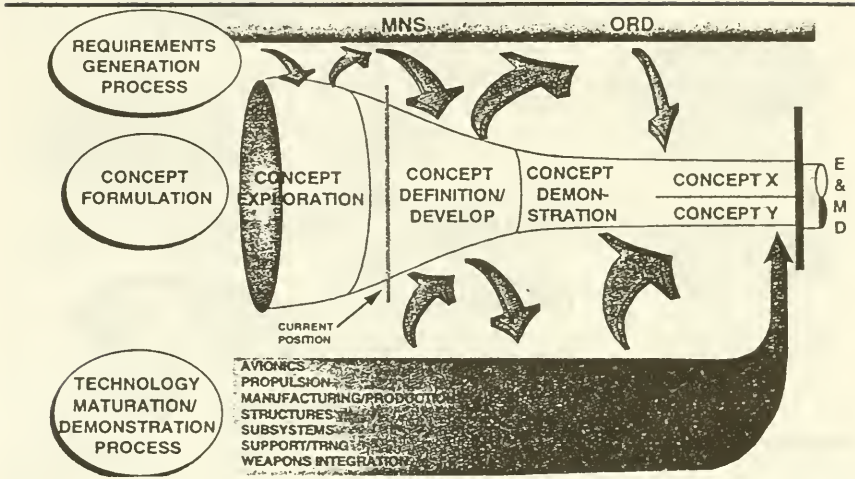
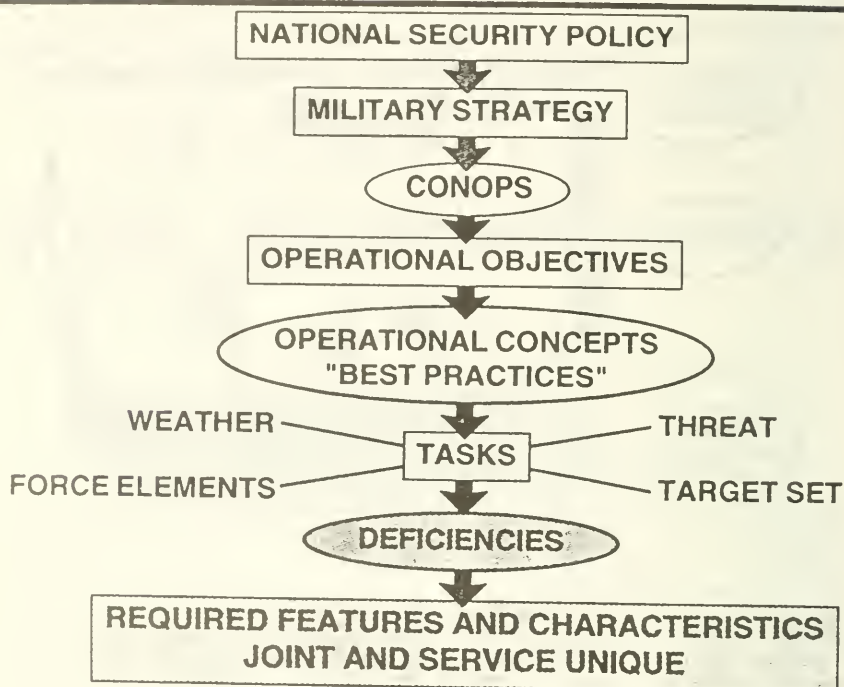


Figure 4

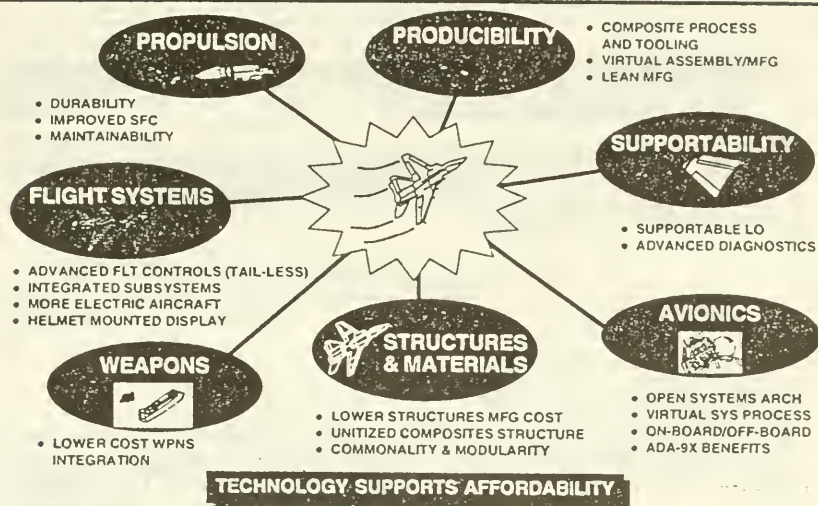
DEFINING THE REQUIREMENT



The Joint Advanced Strike Technology Program is not a technology development program; but is rather a technology demonstration program designed to provide proven "building blocks" for affordable, successful development and production of the next generation strike weapon systems. The Joint Advanced Strike Technology Program relies on the Science and Technology community to provide our "seed corn." We have reviewed and cataloged over 585 technology programs within government and industry and have used this information in formulating our initial investment plan (see figure 5). Within the last year we have initiated over 70 contracts to begin the transition of these leveraging technologies by first defining cost versus performance trades and then conducting risk reduction demonstrations.

Figure 5

TECHNOLOGY DEMONSTRATION PROCESS



Joint Advanced Strike Technology Program demonstrations have begun. We recently completed evaluation of carrier suitability of tail-less configurations using the X-31 aircraft. Our demonstrations, such as large composite structures and virtual avionics system design, are unique in that all of our industry partners are participants. Wherever possible, we are using directly comparable components from the F/A-18E/F and F-22 so that those programs may also benefit from our successes. We successfully integrated the Advanced Research Projects Agency Advanced Short Take Off and Vertical Landing Program into the Joint Advanced Strike Technology Program and last week completed initial ground engine testing at Pratt and Whitney for one of those concepts. Full scale models will complete wind tunnel tests later this year.

The Joint Advanced Strike Technology Program is a leader in acquisition streamlining and reform. We pioneered a paperless acquisition process, employing electronic procedures from solicitation through contract award. In our three solicitations to date, this system has saved over 300,000 pieces of paper and over a year in time. This "tool set" is now being used as a model for the Navy, Air Force, Coast Guard, FAA and other government agencies.

The Joint Advanced Strike Technology Program emphasizes electronic processes as the standard means of communication. We have an extensive database which exploits the Internet for efficient, real-time dissemination of program information. We average over 200 individual accesses daily. Congressional staffs are using this system on a regular basis. Response from Industry, Academia and Government has been extremely enthusiastic.

PROGRAM STATUS

The Joint Advanced Strike Technology Program completed its Concept Exploration phase, see figure 6, in December 1994. The results underscored the possibility and benefit of commonality as a viable means for achieving significant savings in next generation strike aircraft. Figure 7 provides a summary of leveraging investments identified by both government and industry. The key conclusion is that a family of aircraft can meet tri-service needs, with overall significant Life Cycle Cost savings.

Figure 6

FAST PROGRAM SCHEDULE

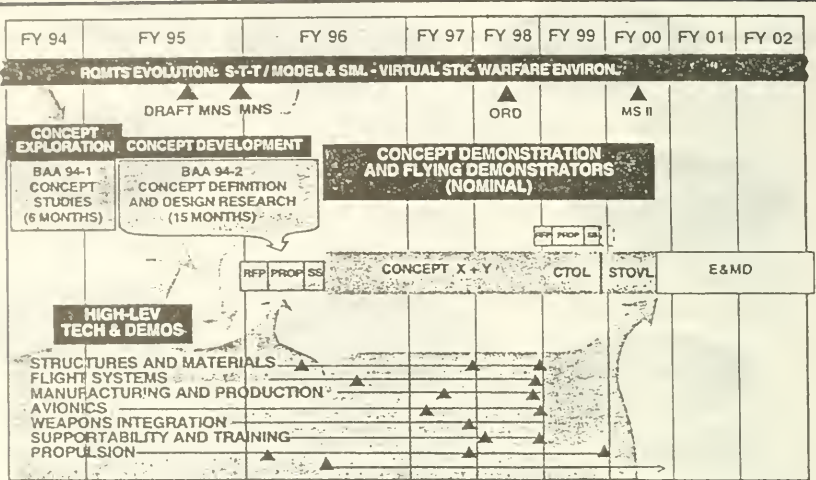


Figure 7

CONCEPT EXPLORATION SUMMARY

- **LEVERAGING INVESTMENT AREAS:**

- UNITIZED COMPOSITE STRUCTURES
- SUBSYSTEM INTEGRATION
- INTEGRATED SENSORS & APERTURES & OPEN SYSTEM ARCHITECHTURE
- SUPPORTABLE LO MATERIAL & INTEGRATION
- RAPID PROTOTYPING & LEAN MANUFACTURING
- SUPERINTEGRATED DIAGNOSTICS
- I-1000
- IMPROVED ENGINE RELIABILITY
- EXPLOITATION OF OFF-BOARD INFORMATION

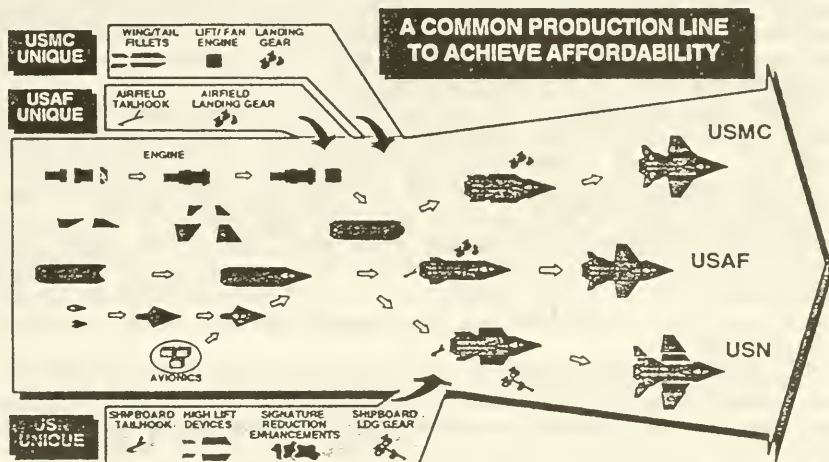
- **OVERALL POTENTIAL**

- A FAMILY OF AIRCRAFT WHICH MEETS TRI SERVICE NEEDS IS FEASIBLE
- SIGNIFICANT LCC SAVINGS

The "family of aircraft" concept allows a high level of commonality while satisfying unique service needs. The degree of commonality varies between 70 and 90 percent with individual contractor designs. This approach brings with it the cost benefits of a common Depot, commonly supported logistics trail, and increased joint service interoperability. Figure 8 provides a notional depiction of the common production line which would produce such a family of aircraft.

Figure 8

CURRENT PROGRAM FOCUS A FAMILY OF THREE AIRCRAFT



The program entered the Concept Development phase in December with award of 24 contracts worth \$130 million. These contracts address five broad areas: weapon system concept development; avionics; structures and materials; propulsion; and modeling, simulation and analysis. The primary emphasis will be to develop aircraft system designs that take advantage of the "family of aircraft" concept and define the leveraging technology demonstrations. The end result of this phase will be an integrated plan for the follow on Demonstration Phase which includes flying operational concepts.

FUTURE PLANS

The Flight Demonstration phase of the program commences in fiscal year 1996 with the competitive award of two contracts for flight demonstrations for a family of aircraft (including a STOVL variant) which meets the needs of all three services. Risk mitigating technology ground demonstrations will continue. The services' joint Operational Requirements Document is anticipated in 1998. The Joint Advanced Strike Technology Program will lead to a Milestone II in fiscal year 2000 for a follow-on joint development program.

SUMMARY

In conclusion, the services jointly created and remain strongly committed to the Joint Advanced Strike Technology Program to develop an affordable solution to their future strike warfare needs. The program employs integrated teams of warfighters and technologists to achieve a defined balance of cost and performance for future strike systems. The government and industry team is working well together in identifying leveraging technologies, necessary demonstration plans to control risk, and new ways of doing business that reduce cost.

The Joint Advanced Strike Technology Program has narrowed its focus over the last year. It is converging on a design concept for a family of strike aircraft systems which, coupled with the other technology "building blocks," will yield continued technological superiority for our warfighters but much more affordably.

Mr. Chairman, that concludes my statement. I stand ready to answer your questions.

STATEMENT OF REAR ADM. BRENT M. BENNITT, U.S. NAVY, DIRECTOR, AIR WARFARE DIVISION, OFFICE OF THE CHIEF OF NAVAL OPERATIONS

Admiral BENNITT. Thank you, Mr. Chairman and members of the subcommittee. It is my pleasure to appear before you again this year to discuss Naval aviation's tactical picture, our current plans, and our vision for the future. I have also submitted a statement for the record that I believe addresses the three questions that you provided me in the letter that you sent.

I will only emphasize two things, and they really deal with the slight differences in the program we discussed with you last year and what we have in the program that we will work with you this year, the first one being the EA-6B and the increase in the number of platforms that we will work on with you this year.

We have increased the number from what we talked about last year from 100 to 120 platforms to try to respond to the joint requirement with a single platform. I have addressed that in my statement, and I would expect that we will be able to discuss that a little later.

The other two questions that you provided to me were in relation to our road map for the future with regards to deep strike. I think we remain consistent with exactly what we talked to you about last year.

Our cornerstone for the future of deep strike remains our plan to field the F/A-18 E/F along with the precision and accurate weapons that the Air Force, Navy, and Marine Corps are planning to field at about the same time, around the turn of the century. Specifically, JSOW and JDAM; and for the Navy, the SLAM ER; and then the complimentary introduction of a product of General Muellner's program around 2010, which we think will provide a smooth transition to a more stealthy first day of survivable stand alone carrier air wing configuration on our carrier decks.

Then, last but not least, I think our commitment to JAST is firm and solid. We appreciate the work that General Muellner and his team have done over the last year. It has been a remarkable year with regard to the maturation of the JAST process. We have a long way to go, but I think the road is fairly clear. We are excited about that process, and I look forward to your questions, sir.

[The prepared statement of Rear Adm. Brent M. Bennitt follows:]

PREPARED STATEMENT BY REAR ADM. BRENT M. BENNITT, USN, DIRECTOR, AIR WARFARE DIVISION

INTRODUCTION

Mr. Chairman and distinguished members of the subcommittee, thank you for this opportunity to appear before you to discuss the Department of the Navy's plan for Tactical Naval Aviation. I would like to update you on significant initiatives undertaken by the Department to ensure that Naval Aviation fully supports the new Navy expeditionary force strategy contained in the White Paper "Forward . . . From The Sea" prepared jointly by the Secretary of the Navy, Chief of Naval Operations, and Commandant of the Marine Corps.

SHIFTING WORLD ORDER

The rapid shift from bi-polar dominance to multi-polar, geopolitical diversity has necessitated a major revision to naval strategy. "Forward . . . From the Sea" sets forth the Department's vision of naval expeditionary force strategy for the future. Addressing the unique contributions of forward deployed naval expeditionary forces

in peacetime operations, crisis response, and regional conflicts, this document provides the broad framework upon which to build a force structure that focuses on regional challenges and opportunities. It clearly defines the role of the Navy and Marine corps, not just for the current post Cold War era, but for the next several decades as well. As we look to the future, we see a more chaotic world with no single competitor to challenge our national interests. Emphasis has shifted from preparation for global; open-ocean warfare with the Soviet Union as the most likely adversary, to potential regional conflict with any number of well armed Third World powers.

Naval forces capable of meeting threats generated by the shifting world order are somewhat different than those designed and built to fight the Cold War. We now emphasize expeditionary Naval forces shaped for joint operations and able to operate forward, from the sea. They must not only possess capability across a wide spectrum of naval warfare but also be especially adapted for littoral warfare and "maneuver from the sea."

The Bottom-Up Review concluded that the U.S. Navy needs 346 ships, including 11 active/1 operational/reserve aircraft carriers and 11 carrier air wings. For tactical Naval Aviation, this means fixed wing aircraft carriers and air capable ships focused on expeditionary warfare and suited for forward presence, power projection and joint strike, battle space superiority, command and control, and force sustainment. I believe we have met these objectives.

BUDGET OVERVIEW

The best of all possible modernization plans, if prepared without a realistic view of projected trends for defense spending, will never materialize. The Department's modernization plans were built with a keen appreciation for the current fiscal constraints and an understanding for declining defense spending.

With the end of the Cold War, Naval Aviation needed to realign to adjust to the new world order. The last 6 years have seen drastic fiscal reductions, major program cancellations, and charges that Naval Aviation did not have a plan for the future. This is not the case.

Naval Aviation has moved quickly to restructure itself within this constrained environment. In order to meet mandatory budget reductions and to provide funding for Naval Aviation modernization and recapitalization, the Department has taken bold steps to reduce force structure, and the associated infrastructure, without jeopardizing our core capabilities or incurring an unacceptable level of risk. This restructuring or "rightsizing" is nearly complete, however, and now is the time to build for the future.

I must emphasize that we have been living off the inventory and capabilities built up in the 1980s. But now, we must begin to recapitalize our forces. The programs that I will discuss have been afforded within a fiscal environment of decreasing budgets. We have made the hard decisions, the difficult tradeoffs to regain forward momentum. These plans are fully funded and require no change or increased growth in the current FYDP.

We are proceeding with the following major changes:

- Reducing the carrier force levels to 11 Active and 1 operational/Reserve carrier that will be available for a periodic deployment.

- Reducing the carrier air wing force levels to 10 Active and 1 Reserve air wings. The Reserve air wing has been restructured to reflect a more dynamic and functional strike-fighter mix.

- Reducing, in the near term, the number of tactical aircraft planned for each of our carrier air wings. This is based on the ability to meet presence requirements with a more efficient mix of strikefighter aircraft. Carrier air wings will transition during this decade from a mixture of about 60 single and multi-mission platforms to 50 multi-mission strikefighters (three F/A-18 squadrons (36 aircraft) and a single F-14 squadron (14 aircraft)). Of course, our air wings still reflect the flexibility of previous years and we will reserve the option of tailoring the specific composition of deploying air wings to meet task-oriented and geographical requirements.

- Removing the aging A-6 aircraft from the Active inventory by the end of fiscal year 1997, a decision which has allowed us to save scarce funds and reinvest in higher priority programs.

- Through affordable re-capitalization and prioritized modernization programs, selected investments have been directed to update our most critical weapon systems such as the F/A-18s, V-22, E-2, F-14, and EA-6B.

- Recognizing the virtues and flexibility of carrier based air forces, we are integrating two to three selected Marine F/A-18 strike fighter squadrons and an EA-6B Prowler squadron into Navy carrier air wings.

- Emphasizing Joint Systems Development to support multi-mission aircraft and deploy weapon systems such as the Joint Standoff Weapon (JSOW), Joint Directed Attack Munitions (JDAM), and the Advanced Strike Technology (JAST) Program.

- Elimination of our Active adversary squadrons in order to strengthen the core of our deploying units and transition the mission to the Reserve forces.

- Adjusting pilot training rates to account for force structure reductions while reducing training pools.

- Making aggressive, yet sound, infrastructure reductions, including single-siting all tactical aviation fleet replacement training squadrons (FRS) with the exception of the F/A-18 community which will remain at 3.

Overall, the aforementioned force structure reductions and revisions will result in the decommissioning of an additional five tactical aircraft squadrons in fiscal year 1996 (2 A-6, 1 F-14, and 2 F/A-18 (Adversary)).

AIRCRAFT PROCUREMENT PLAN

The Department's aircraft procurement budget submit for fiscal year 1996 is \$3.89 billion and is based on realistic defense spending projections. Equally as important, it fully supports Naval Aviation's role in "Forward . . . From the Sea". This budget will allow us to buy 31 aircraft in fiscal year 1996 as well as to modify and upgrade others. The Navy budget for aircraft procurement is based on our short term strategy to "neck-down" to two primary tactical aircraft, the F/A-18 and the F-14, and our long term strategy to achieve an air wing composition of F/A-18 E/Fs and JAST.

NAVAL AVIATION STRIKE FORCE PLAN

The challenge for Naval Aviation is to restructure our forces for the 21st century in an era of a declining defense budget, to balance force structure with modernization, re-capitalization and readiness requirements and, most importantly, to avoid a hollow force structure. Budget cuts and downsizing plans for the Department of the Navy, coupled with the redefinition of the Navy's air power role as described in our "Forward . . . From the Sea" strategic plan, forced us to review the structure of our carrier-based strike force. To achieve budget goals while maintaining the best possible fighting force on our forward deployed carriers and to maintain our power projection capability that separates us from other services, we chose to eliminate an entire type/model/series aircraft as the most cost-effective solution. That aircraft is, of course, the A-6E.

To partially offset the loss of the A-6E capability until the arrival of the Navy's next generation strike aircraft, the F/A-18 E/F and JAST, we are proposing modest modifications to the F-14 aircraft which has a radius of combat action almost equal to that of the F/A-18 E/F. Proposed modifications will provide an effective, day/night smart weapon strike capability, fulfilling the Tomcat's potential as a self-escorting, multi-mission aircraft. F-14 precision strike-upgrade modifications will incorporate either JDAM or a FLIR/laser guided bomb capability. These changes will result in a multi-mission carrier air wing strike force of F-14s and USN/USMC F/A-18s which will expand the flexibility of our naval expeditionary force and greatly enhance its strike capabilities.

Eliminating the A-6E while implementing modest strike capability upgrades to the F-14 will provide significant development and modification cost savings while simultaneously enhancing the striking power of the carrier air wing. The plan is cost effective and affords considerable long-term savings to sustain our aviation force structure plan. It reflects the tenets in "Forward . . . From the Sea."

CARRIER BASED AIR (F/A-18 E/F & JAST)

To meet the Navy/Marine Corps tasking encapsulated in "Forward . . . From the Sea," specifically Battle Space Superiority, Power Projection, and Force Sustainment, we continue to pursue our long term "neck-down" strategy to two primary tactical aircraft: the F/A18 E/F and JAST. Together, these two aircraft will provide Battle Group Commanders the flexibility to deal with any crisis.

The F/A-18 E/F is our highest warfighting priority. It is a significant improvement to the demonstrated, combat proven excellence of the current F/A-18 C/D. Despite its proven combat capability, the C/D does have some deficiencies that the E/F will correct, such as: limited mission radius & endurance, insufficient carrier recovery payload, vulnerability in high threat scenarios, and no potential for combat systems growth.

The E/F will greatly expand on the proven capabilities of the C/D model as well as provide 90 commonality with C/D avionics, software, and weapon load. Mission radius will increase by 35 percent, endurance by 50 percent, and weapons carriage

by 22 percent. It will carry an additional 3,600 pounds of internal fuel, increasing littoral target coverage by 52 percent. It will increase carrier recovery payload to 9,000 pounds, a significant improvement in payload flexibility. It embodies enhanced self-protection capabilities through signature reduction and self defense systems, increasing survivability by one order of magnitude. The E/F is optimized for high intensity power projection operations from carriers and expeditionary airfields. In addition, an aerial refueling (buddy store) capability is included. The program is on schedule and is executable within the congressionally imposed RDT&E cap of \$4.88 billion. The first flight is scheduled for December 1995.

JAST development is a joint Navy, Marine, and Air Force effort initiated to serve as DOD's focal point for defining future strike systems. JAST will identify, promote, and demonstrate key leveraging technologies for the reduction of life cycle costs for each services' next generation strike-fighter aircraft. We believe that a product of the JAST process will complement the F/A-18 E/F and will allow the Navy to "neck-down" to two tactical aircraft types. The JAST program is closing out its initial Phase I contracts, and Phase II contracts were awarded in December 1994. The Navy is firmly committed to JAST as the key to fulfilling both the Navy's requirement for a "first day survivable, stand-alone, strike-fighter" and the Marine Corps' requirement to replace their AV-8s and F/A-18s with Advanced Short Takeoff and Vertical Landing (ASTOVL) aircraft.

Together, these aircraft optimize tactical Naval Aviation for the new direction envisioned in "Forward . . . From the Sea." They provide flexibility and capability for any contingency. The cooperative interaction of these multi-role aircraft in the AAW role will ensure battle space dominance. Power projection is optimized by their unprecedented strike firepower in concert with other joint forces. Force sustainment is enhanced by the high sortie generation rate of the E/F and the high survivability of JAST. In conclusion, the F/A-18 E/F and JAST, are precisely the type of aircraft required to execute our new strategy well into the 21st century.

TACTICAL AIRCRAFT MODERNIZATION

A centerpiece of Naval Aviation is a robust modernization program which enables us to maintain our warfighting edge. In addition to warfighting improvements, modernization allows us to incorporate the latest technology in our older platforms which increases reliability, effectiveness, and maintainability of our existing weapons systems. Our primary modernization efforts are focused on the following platforms: F-14 and EA-6B.

The F-14 aircraft will continue to be upgraded to partially compensate for the loss of the A-6 strike capability. Necessary structural, survivability, and interoperability improvements will be made simultaneously with a modest "precision strike" capability. This day/night precision strike capability (JDAM or FLIR/laser) will increase the number of multi-mission aircraft available to the force commander.

The EA-6B aircraft remains the premier tactical jamming platform in the world. Projected to be in the inventory until 2015, ICAP II (Block 89A) will require an upgrade planned to begin in 1998. Based on the Lower Cost Alternative to ADVCAP Study, modifications will address aircraft structure and supportability problems as well as enhanced warfighting capabilities. Beginning in fiscal year 1997 the EA-6B will assume the role of standoff jammer for the Air Force, replacing the EF-111. The Joint Staff has recently begun a study focusing on the Air Force plan to retire the EF-111. The study will develop integrated operational concepts for employing the EA-6B in those missions, propose an appropriate schedule for the transition, and assess the need for upgrades, if any, to the EA-6B force beyond those already planned.

These modernization programs, in conjunction with our procurement plans, will result in a tremendous amount of capability for our forward deployed forces and ensure that tactical Naval Aviation maintains its robust capabilities.

AIRCRAFT CARRIERS

Despite all the changes to our Naval Strategy, one element of our national security policy that has not changed is our continued reliance upon the aircraft carrier to respond to regional crises. Aircraft carriers, with their embarked air wings, are and will continue to be the centerpiece of the U.S. Navy. We have recently witnessed the utility of the aircraft carrier in our enforcement of the U.N. no-fly zones in Bosnia and over Iraq, and in Operation Restore Hope in Somalia. To meet National Command Authority and Bottom-Up Review tasking with a carrier force level of 12 (11 Active and 1 operational/Reserve), it is essential that follow-on planning for the next carrier begin now. As directed by the Bottom-Up Review, a study of

alternative aircraft carrier concepts for the 21st century is being planned to develop and assess a range of affordable technologies for future aircraft carriers.

WEAPONS MODERNIZATION

The same neck-down strategy that applies to aircraft procurement also pertains to our procurement of future weapons. In addition, nearly all future weapons will be jointly procured. Currently under development are two new families of accurate guided weapons: the Joint Direct Attack Munition (JDAM) and the Joint Standoff Weapon (JSOW). These two programs are designed to significantly increase capability (accuracy) and survivability (standoff) as well as to reduce the types of weapons in the Navy's inventory.

With the cancellation of TSSAM, we are also rapidly proceeding with a retrofit program to provide significant survivability and performance improvements to the existing inventory of the Navy's only long-range, man-in-the-loop, air-launched precision standoff missile. The Standoff Land Attack Missile - Expanded Response (SLAM-ER) will provide precision strike against fixed, high value land targets and ships in port.

SUMMARY

We are committed to maintaining robust Navy and Marine Corps expeditionary forces capable of operating "Forward . . . From the Sea." Significant departures from our previous tactical aviation plans exist, but they are driven by fiscally mandated reductions in the Department's budget. However, capturing savings realized by controlled programmed reductions and carefully selected high priority, cost effective investments has allowed us to continue with our procurement and modernization strategies to ensure that tactical Naval Aviation will always be a force in readiness, responding with flexibility and precision.

Naval Aviation has made extraordinary contributions to our national security in the past and will continue to do so for the foreseeable future. In partnership with the Congress, we will continue to ensure that our Navy/Marine forces are prepared for any contingency.

Senator WARNER. General McCloud.

STATEMENT OF BRIG. GEN. DAVID J. McCLOUD, U.S. AIR FORCE, DIRECTOR OF OPERATIONAL REQUIREMENTS, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PLANS AND OPERATIONS

General McCLOUD. Mr. Chairman and members of the committee, it is an honor to be here. I, too, have submitted a written statement. I would like to point out that the Air Force over the past year has gone through an extensive relook at our mission area plans, to make sure we upgrade our airplanes in the right manner to support joint requirements. I would be prepared to talk about any of those that you wish to talk about.

Thank you.

Senator WARNER. Thank you.

[The prepared statement of Brig. Gen. David J. McCloud follows:]

PREPARED STATEMENT BY BRIG. GEN. DAVID J. McCLOUD

Mr. Chairman and distinguished members of this committee. This written statement is submitted as a supplement to my verbal testimony before the committee, and to provide more in depth information than time would otherwise allow.

This is an exciting, important time for the Air Force. We are at the crossroads of a revolution in warfare, brought about by new technologies and the incorporation of those technologies into military doctrine, organization, and operations. At the same time, we are asking some difficult choices in order to live within our fiscal means. Our goal—balance readiness, modernization, and procurement.

In addition to the Joint Staff and the services' Joint Warfighting Capabilities Assessments, the Air Force recently completed an in-depth analysis of current and projected capabilities and tactical aviation investment strategies. Although no widespread changes in strategy resulted from these reviews, we have addressed some changes in the budget. Now we have a better understanding of where we are and

where we need to be in the coming decades. This allows us to better support the CINCs and the joint warfighting team.

Our number one priority has been, and will continue to be, providing air superiority for all U.S. Forces. Air superiority provides freedom of maneuver so that ground, air, and naval forces can end conflicts quickly and decisively. The initial battle for air superiority will directly influence the outcome of any major regional conflict. Early deploying fighter forces may have to engage the full weight of the enemy's air forces, missile forces, and surface-to-air defenses.

The air threat is growing more sophisticated every day. The current fleet of F-15s is already challenged by the proliferation of advanced fighters, air-to-air missiles, cruise missiles, and surface-to-air missiles (SAMs) which will erode our capability to guarantee freedom of attack from the air to our forces. This increasing threat and the possibility of development and proliferation of low observable (stealth) technology in aircraft and cruise missiles demands that we modernize our air superiority capabilities.

To ensure air superiority in future joint warfare, the F-22 is our top long-term modernization objective. The deployment of the F-22 is critical to our ability to control the skies over the battlefield. In addition, the F-22's ability to penetrate heavy defenses, unassisted, to deliver the Joint Direct Attack Munition (JDAM), make it a strong contributor to the strike mission as well.

In addition, we need to equip current and future fighters with improved air-to-air weapons. We plan to increase our technological edge in radar missiles by improving the AMRAAM and to regain dominance in the visual arena through development of the short range AIM-9X missile.

Upgrades in command and control aircraft, such as AWACS and Rivet Joint, are vital to the ability to control the airspace. Joint Tactical Information Distribution System (JTIDS) terminals in command and control and air superiority aircraft will greatly increase battlefield awareness and combat effectiveness while reducing the possibility of friendly fire incidents.

Efforts in theater missile defense are centered in three critical areas: attack operations, boost phase intercept operations, and cruise missile defense. Both attack and boost phase intercept operations are designed to kill missiles before they threaten friendly forces. Programs in the first area, attack operations, will improve our capability to destroy enemy theater missile forces on the ground. We have several promising programs to increase sensor and intelligence capabilities that locate and target missiles and distribute timely command and control information to airborne attack forces.

The second effort focuses on attacking the missile during the boost phase. By killing a missile early in flight, submunitions and weapons of mass destruction fall in enemy territory instead of continuing towards friendly forces or population centers. Continued development of the Airborne laser (capable of detecting, tracking, and destroying the missile using a speed of light, high power laser) is a priority. This technology continues to show great promise. At the same time, we are continuing to explore an air launched intercept missile designed to kill ballistic missiles during the boost phase.

One of the most difficult areas of theater missile defense is detecting and destroying small, stealthy, cruise missiles. We are funding several programs which will greatly increase our ability to accomplish this mission. However, these programs exceed the classification level of this discussion. We will provide additional information to your staff as these programs progress.

Each effort is designed to provide a layered defense in concert, not competition, with those being developed by the Army and the Navy, similar to the layered air defense we currently employ against enemy aircraft.

An important element in achieving air superiority is the ability to suppress and kill enemy air defenses. Stealth capabilities, improved stand-off and precision weapons, electronic jamming, and attack operations must work in concert to provide protection for strike packages.

Our current and future investment strategy will allow our forces to attack heavily defended areas. The stealth capabilities of the F-117, B-2, F-22, and NGAF will help us dominate in high threat environments. The Joint Standoff Weapon (JSOW) and the replacement for the Tri-Service Standoff Attack Missile (TSSAM), will greatly improve the capability to attack from outside the range of enemy forces.

Electronic jamming provides important protection for strike packages. Due to the cost of ownership, we are in the process of examining options for the retirement of the EF-111, our only standoff jammer, in favor of joint use of the Navy EA-6B. However, there are several programs focused on improving self-protection capability on our aircraft. F-15E and B-1 Electronic Combat Measures (ECM) upgrades will increase their survivability and reduce reliance on stand-off jamming support.

Protection of the strike package will improve with advances in the ability to locate, target, and destroy surface-to-air missiles, particularly those that can move quickly. The recent addition of the High Speed Anti-Radiation Missile (HARM) Targeting System (HTS) to our Block 50/52 F-16s provides a good capability to target and kill surface-to-air missiles (SAMs) that are actively emitting radar signals. The F-16 HTS allowed retirement of the aging F-4G, Wild Weasel, aircraft.

Once air superiority is achieved, our air forces can focus on attacking the enemy's infrastructure and force. We will employ stealth and stand-off capabilities to eliminate the enemy's ability to defend targets. This will allow less stealthy forces to operate more safely over enemy territory. To successfully execute this strategy, our force must be able to accurately deliver standoff and precision weapons, from a safe altitude, and in adverse weather.

Our ability to deliver precision guided ordnance has improved significantly since Desert Storm. However, improvement is needed in our capability to deliver ordnance during periods of adverse weather (i.e. through the clouds) without visually acquiring the target. Just as the enemy was denied the cover of darkness with the introduction of our night systems, we must now deny him the respite that weather provides.

To do this, we are developing a new class of weapon, with internal guidance using either the Global Positioning System (GPS), inertial guidance, or a combination of both. We have already added GPS capability to our AGM-130 stand-off weapon. More importantly, two follow-on weapons the Air Force/Navy Joint Direct Attack Munition (JDAM) and Joint Stand-off Weapon (JSOW), rely on internal guidance systems. Both of these programs are vital to our future deep strike capability. The near precision, and eventually precision, capabilities of these weapons allow employment through the weather, on multiple targets per attack. This maximizes combat effectiveness while minimizing collateral damage inherent in unguided munitions.

The bomber force will be able to deliver these weapons as well. Within a few years the B-52 and the B-2 could carry JDAM and JSOW. The B-1 is being modified by a Conventional Munition Upgrade Program (CMUP) that will provide the same capability. These platforms enable us to fly missions from the United States and attack targets or stop advancing enemy early in a conflict, before deploying friendly forces arrive in theater. Upgrade of the bomber force and the integration of these new weapons is a top priority.

The Wind Corrected Munitions Dispenser (WCMD) program will equip Cluster Bomb Units with inertial guidance systems that can guide them to targets from medium altitude. CBUs can be loaded with anti-armor, combined effects munitions (anti-personnel and vehicles) and Gator area denial munitions. An improved delivery capability provides greater Close Air Support (CAS) to our ground troops.

We are improving support to the ground war in several other ways, as well. By equipping A-10 tank killers with night vision goggles, and using night capable low altitude night targeting infrared navigation (LANTIRN) equipped F-16s, we can now provide the Army with 24 hour close air support. We are also introducing an Improved Data Modem to CAS airplanes to allow the ground troops, through the FAC, to better communicate the location of enemy formations, as well as friendly troops. This improved capability will help avoid friendly fire incidents and increase the effectiveness of close air support.

Finally, the workhorse of our tactical fleet is the F-16. The F-16s encompass the largest part of our inventory and are tasked with a variety of missions. After the F-22, the Joint Advanced Strike Technology (JAST) program is our most important tactical fighter program. As the F-16s age out of the fleet, the JAST program will produce the Next Generation Attack Fighter (NGAF), our F-16 replacement. We expect the NGAF to carry the bulk of the air to ground effort using precision munitions and stealth technology. Because we will require a large number of these aircraft, they must be affordable. This joint Air Force, Navy, and Marine program is proceeding well and we are confident that it will produce a superb, affordable next generation fighter.

All of these programs are designed to invest limited resources in areas that will yield the greatest returns towards a ready and capable future joint warfighting force.

Thank you for the opportunity to tell the Air Force tactical aviation story. We appreciate the support this committee has given us in the past and look forward to working with you in the future.

Senator WARNER. I will lead off with the question period. Frankly, what I am going to ask the three services is their own view as

to the JAST Program and whether or not it is meeting any of their needs and requirements. General Blot?

General BLOT. Yes, sir, I would be pleased to respond to that question. The bottom line first: JAST is our tactical future for the United States Marine Corps. If you go back some time, for at least the last 25 years, we have been optimizing our training and equipment in the United States Marine Corps to go towards our most probable use, which is the Third World, very low infrastructure scenario.

The world has turned that way, so right now almost everybody is marching down that path, but we have been doing it for some time. One of the characteristics that comes to the front when you do that is you need to be able to go to places other than established airfields and then stay there.

As part of our maneuverability and reducing our strategic footprints to allow us to get to these areas, the ground side has reduced its artillery, counting on airplanes to be able to respond quickly. One of the ways to do that is to park closer to the troops. We now have an AV-8 that can operate in that environment, and we have our F-18s operating off expeditionary airfields so that we move up as close as we can get to that expeditionary airfield.

Both of these airplanes will be replaced by the ASTOVL Strike-Fighter coming out of the JAST Program, so that the United States Marine Corps will be down to one tactical strike fighter during that timeframe. As far as I am concerned, it is addressing us, and in fact it is our future for tactical aviation.

Senator WARNER. That is a clear answer. Admiral Bennitt?

Admiral BENNITT. Yes, sir, as I mentioned earlier and as General Muellner represented when he talked about the Navy requirements, our first requirement, obviously, is for a carrier suitable product from JAST. Second, one that meets the signature requirements that we think will fulfill the requirement to be first day stand alone, as opposed to the rest of our capability on the carrier decks. This is certainly first day capable but requires a very healthy infusion of support, either from an EA-6Bs' stand-off jamming, perhaps Tomahawk Cruise Missiles, and other lethal support measures that would allow our aircraft to be very effective on the first day.

The stand alone aspect of the product that we want from JAST would allow it to require considerably less support capability to deliver the same kind of precision weapons that the rest of our carrier force would be able to deliver. We think that those two challenges, both the carrier suitability and the signature reduction along with the range and payload that General Muellner discussed, are being addressed at this stage of the JAST Program.

We look forward to working with JAST this summer to solidify the Joint Mission Need Statement that will take into account the mission needs of each one of the services, and then further defining and refining those requirements through an operational requirements document in the not too distant future.

General Muellner is challenged, as he discussed quite frequently, in terms of the timeline that we have provided for him. We have given him a very aggressive schedule to try to meld the requirements process, the technology requirements, and the technology

availability into a producible and affordable platform. But we think that the Navy's requirements are being addressed in that process.

There are, indeed, some challenges to the program. To be able to do that in an affordable manner for us, the ideal solution would be a carrier suitable variant that would meet everyone's requirements. We think it is far easier to downsize from the carrier suitable family, as it were, rather than upsize from one that is not. General Muellner and his people certainly understand that challenge, and we look forward to working with them as they continue to develop this next year's proposal that will put that on paper.

Senator WARNER. Thank you. General McCloud?

General MCCLOUD. Sir, I do believe that JAST will meet the Air Force needs of the future. As you know, the F-16 starts to age out of the inventory at, roughly, the 2010 timeframe. It is critical that we get a replacement airplane in that timeframe. Second, the airplane must be affordable, and to me this means a lot of commonality with the other airplanes that are produced. Thirdly, we believe that the requirements if designed properly will meet Air Force needs.

In that regard I believe that we are going to have to do some compromising with our sister services; we are prepared to do that. Overall, I think it is a good program. I think it will meet our needs in the year 2010.

Senator WARNER. I will return to the question on the second round.

Senator Levin?

Senator LEVIN. General Muellner, I would like to understand the JAST Joint Program a little better than I do right now, and I may have missed this in your opening. Why should we be more confident that the JAST Program is going to be more successful than previous joint airframe programs?

General MUELLNER. Sir, I think the primary reason really gets back to a question that Mr. Warner, Senator Warner, addressed a moment ago; and that is, the cooperation between the three services. As we have worked our way through the requirements process, which we have been working now for the better part of a year, and also on the technology side, the three services have worked together as a team to look for an affordable solution. I think in some cases in the past that has not always been the case. I think all three of the services well recognize that it is going to take this sort of approach to affordably meet their needs in the outyears.

I would say the second approach, or the second answer rather, is that there are some key technologies that have come along that increase our likelihood of success here. Some of them are in the areas of composite technologies, another is in the area of the engines that were developed for the ATF, for the F-22 Program. Those engines have the highest thrust to weight that we have ever been able to put out, and allow us to address not only the more conventional Air Force and Navy landing/takeoff approaches, but also the vertical landing requirement of the Marine Corps.

I think it is a harmony of the teamwork of the three services working together and also the technology that has become available that should give you some confidence that I think we can do this.

I might add, industry has been part and parcel of this in the beginning, and they well understand the importance of leaning our approach to doing business. They have aggressively worked this from all elements and have been part of this team from the beginning. A lot of the data that I show you is not government data, it is industry data. It indicates their optimism also.

Senator LEVIN. Would you go through the timeline for us on the JAST Program, including the various stages?

General MUELLNER. Certainly.

Rich, would you put up that chart, please?

Sir, right now we are in the concept definition phase, the one you see reflected in the next phase over there. That lasts about 15 months, we initiated that this past December. I might add we initiated it through a paperless source selection process.

I know we discussed this with Senator Warner last year. This process has gone very well, this digital information flow. That will continue through early spring of next year, at which time the prime contractors will present their preferred system concepts to us.

These preferred system concepts will be for a family of airplanes that will address the needs of the three services, as you saw in that one previous chart that I threw up. These contractors all independently—after looking at it, at the affordability issues, and at where the requirement space was coalescing—came to the conclusion that they could, indeed, design a family of airplanes.

Now, the commonality across that family, from one to the other, varies between 70 to 90 percent, depending on which individual contractor design you have. But it still leads to tremendous cost savings in infrastructure, production lines, suppliers, et cetera.

We go out of that phase into the demonstration phase, and our approach to that will be a competitive selection of two contractors or two teams, if that is case, that would produce flying and ground demonstrators to give us confidence out in the year 2000 that one of these approaches is, indeed, ready for a low technical risk introduction into a full-up engineering and manufacturing development program.

The key definition phase that is going on now will end next spring. From then on we will get into the demonstration phase, where you are going to see a lot more hardware actually flying in ground demonstrations; although, we do have some of that now.

Senator LEVIN. So you expect that what you call "full-up engineering and manufacturing" would begin in the year 2000, roughly?

General MUELLNER. Yes, sir, that is correct. Our intent is to have in place everything necessary to support such a decision in the year 2000.

Senator LEVIN. You have mentioned cutbacks in your program, three kinds?

General MUELLNER. That is correct, sir.

Senator LEVIN. How does that affect the timeline?

General MUELLNER. Well, it does not affect the time so much. What it affects is two issues, one is seven technology areas. These are areas where, with the industry we identified leverage in technologies that could either continue to provide us the technological edge or specifically reduce the cost.

The six programs that I identified that fell out of the program were primarily programs that would have helped us reduce the life cycle cost downstream. We just did not have the resources to take those to a demonstration that said we had adequate confidence in the risk and the cost saving capability of the program.

Senator LEVIN. Would you supply for the record the cost of each of those programs and what the benefits or the payoff would have been and over what period?

General MUELLNER. Absolutely, sir.

Senator LEVIN. When you described the three cuts, I thought in one case you used the word "delay"?

General MUELLNER. Yes, sir.

Senator LEVIN. It was not just that it would not happen, but that something would happen later?

General MUELLNER. Yes, sir. What I said was when we reduced the contractor activity, the engineering activity that the prime contractors will execute in the concept definition and design research phase, meaning some of the risk mitigation activity that they would have incurred, like some of the wind tunnel work that I mentioned, will be delayed. That will have to be done during the concept definition phase.

Senator LEVIN. Now, does that delay your 2000 timeframe?

General MUELLNER. No, sir. What it does do is it gives us a little bit more risk as far as selecting the particular designs. We are going to have to use more analytical data in some cases, as opposed to having the wind tunnel and other supporting data available.

Senator LEVIN. Thank you.

Senator WARNER. Senator Inhofe, and then Senator Santorum will follow your five minutes. He has a 3:15 engagement.

Senator INHOFE. Thank you. General Blot, I noticed in your printed testimony, you discussed the V-22. It is my understanding that the V-22 prototype cost right now is \$40 million. They are trying to get that down to somewhere under \$30 million. Any idea how that can be achieved?

General BLOT. Yes, sir. That is the highest technical effort going on right now in the V-22 Program. This has essentially turned into a fly-before-you-buy program. We had the benefit of doing an FSD, and now we are into the EMD phase of it.

The large technical issues that you would normally be addressing at this point are behind us, and most of the effort is going into: How do I reduce the cost of the airplane? How can I use lean manufacturing? How can I size the production tooling for the actual numbers that we will be buying and not for something that is two or three times that great?

The next effort that would be of substantial help to us of course if they can sell more airplanes, they are actively pursuing trying to get foreign interest in the airplane. In fact, they are intending to bring one of the prototypes over to the Paris Air Show in the hopes of doing that. They are bringing the original XV-15, which was the smaller version, over to try to attract a commercial market.

Then, finally, the program now is a true joint program with the Air Force and SOF, so our own numbers are growing. I think that will be a substantial help—then maybe someday downstream we

will be able to lift the cap of a billion dollars which has put a ceiling on it and the numbers that we can buy per year—which is another way of relieving the pressure on the program.

Senator INHOFE. You know, I have been following this program for about eight years in the House, since the XV-15 days. It has such a tremendous application to civil aviation, of course the Coast Guard has expressed a very high level of interest in it also. What are your production or procurement objectives with the V-22?

General BLOT. Well, right now the objective is to get 425 airframes for the Marine Corps, 50 for the Special Operating Forces, 48 for the United States Navy, and then whatever else we can attract. I think once the airplane starts rolling down a production line—and by the way, I would like to thank the committee for the support. Everything is going very well right now.

The EMD airplane is 300 pounds under its specified weight. The drag counts that we used for our performance computation are the old drag counts. In fact, the actual drag counts of the airplane are significantly lower than that. We think that as the airplane is fielded there will be more and more customers.

Senator INHOFE. If you had the resources to do it, would you want a greater rate of production for your use of this plane?

General BLOT. Absolutely. Those CH-46s are getting a little bit tired out there. We would like to replace them as rapidly as possible. The faster we could do it, then the less amount of work we would have to do on the CH-46s. Of course, ideally it would be wonderful to get the program out of the way before JAST kicks off.

Senator INHOFE. Yes. I used to be on the Coast Guard Committee, and all of their missions such as search and rescue and oil containment could be accomplished with this particular vehicle. I do not know how that plays into your interest as to how the Coast Guard might play into this in terms of numbers, or carrying jointness one more step, towards the Coast Guard.

General BLOT. We have interactive discussions with various numbers of people. The Coast Guard is pulling what I consider the typical Marine Corps trick right now. If I wait, I am going to get it anyway. So why should I step up now when people may charge me money for it? I think you will see as we finish the development and it comes down to actual production prices that they will be on board.

Senator INHOFE. Has that been a pretty effective trick for you?

General BLOT. It has worked wonderfully, sir. [Laughter.]

Senator INHOFE. Thank you.

Senator WARNER. Senator Santorum?

Senator SANTORUM. Thank you, Mr. Chairman.

General BLOT, you may be aware that one of my constituents and actually the son of a friend of mine was just recently killed last Friday in an FA-18 fighter jet crash in training exercises in the mountains in Nevada. Can you tell me if there is an investigation underway and if there are any preliminary reports or details on this accident?

General BLOT. Yes, Senator; unfortunately, your facts are correct. We had a fatal accident out at Fallon. VMFA-251 was flying F-18 Charlies, and Capt. David Bowser was the pilot. He was a pilot that had been awarded a DFC. He was one of our top of the line

people. Captain Bowser was out on a mission—as of yet we do not know what the results are.

Here is a highly educated, wonderful, young man—athletic, bright, flying one of the best airplanes our country knows how to make, and then something goes tragically wrong. We are investigating it. The way we normally investigate things to do two things: one is to be able to answer the question to ourselves of why it happened as well as answer to those who are impacted by this event. The second way is to find out what did go wrong, so we can try to prevent it from happening again. The country has lost one of its best and brightest.

Senator SANTORUM. Well, I thank the general for those comments, and I agree with you. In fact, several members of my staff went to school with him, and I do know his father very well. It is a tragedy. I would appreciate being kept apprised of any further investigation.

General BLOT. Yes, sir.

Senator SANTORUM. Thank you.

Thank you, Mr. Chairman.

Senator WARNER. Thank you for joining us, Senator. We share the loss of your constituent and the family. It is just a constant reminder of the risks taken by aviators, whether it is in peace or war. Operational accidents account for a very, very high number of fatalities in aviation.

General Muellner, the JAST Program was restructured by the Congress last year to include the ASTOVL, A-S-T-O-V-L, Program. It has been a separate entity under ARPA. What have been the effects on the JAST Program of last year's congressional direction?

General MUELLNER. Sir, the most immediate impacts we have as directed combined the two programs. We have fully integrated them together. We now speak to both industry and the services, I think, with a single voice. The previous director from ARPA of that program is on board the JAST staff now, is a full director, and we are executing out those Phase II contracts.

The major impact has really been from the standpoint of funding. The direction to combine those programs unfortunately did not transfer over the ARPA funding, and so my earlier comments about the \$65 million of authority that we lost included a little over \$38 million of that that was specifically fenced to continue to execute out the ASTOVL contracts.

The impact of that is what I have already described. Within the program we had always been looking at the Marine Corps requirements, and so combining the two just occurred a little bit earlier than the services had planned to. The main reason that the services had wanted to keep it separate a little bit longer was, indeed, that propulsion risk that I talked to you about earlier. ARPA is working that in order to drive down the risk. We have taken that on.

I have described for you already that we have those three propulsive lift approaches in demonstration. I think we are on a convergence path that is, indeed, going to allow us to execute out that family of airplanes that includes the ASTOVL family that General Blot said was so important to their future.

Senator WARNER. General Blot, let us turn to the subject of munitions associated with the aircraft. Can you give us your views on the joint developments in the area of munitions?

General BLOT. Yes, sir. Obviously, the smart weapons are something that we are going to have to learn how to employ and to have in our inventory if we want to go into the future. We have been working now with a balance of them to determine how many targets are out that will require those and to ensure we have the right number of smart weapons to address those, as well as sufficient members of level-of-effort weapons. The command a Marine Aviator still recognizes, a valid command, is "kill the tree line," so there have to be weapons that allow you to do that. It is affecting us in many different ways.

Senator WARNER. Is it beneficial or detrimental?

General BLOT. It is beneficial. Close air support has been an area where people have not thought of using smart weapons—it is one of the areas that is now emerging where we can use smart weapons.

There is a program called the automatic target handoff system that allows the Marine on the ground to transmit both his location and the location of the target directly to an airplane flying in the area with this capability. They both will be equipped with Global Positioning System (GPS), so that the marine on the ground will know exactly where it is—not that he did not know before but he will know to a finite detail where he is. He will be able to designate the target with a hand-held laser designator that gives him both range and bearing and pass it to an airplane that has GPS. We will be able to provide close air support through clouds.

The one remaining question is, do you have bombs that are not going to stray off? Bombs like the JDAM Program will then give us that capability. We are moving forward in ways that people did not envision when they looked at smart weapons.

Senator WARNER. Admiral Bennett, your view on the weapons?

Admiral BENNITT. As I mentioned briefly in my opening statement, they are a key element of our road map for the future. I think that the joint weapons development process is probably the most exciting thing we are doing amongst the services right now, because it is so joint. We have common goals, common requirements, and we are sharing technologies across programs in a way that we have really never done before.

We are also excited about the impact that this is having on the cost of the weapons. We think that JDAM will come in considerably lower than we anticipated. That is an Air Force-lead program, and we are proud to be a part of it. JSOW has also been accelerated, the Joint Standoff Weapons Program.

Over the last year, we think we can deliver it quicker, maintain the cost if not lower it, and it will be perhaps a better weapon system than we thought. We are even looking at accelerating the unitary variant of that, which is really the third generation of the weapon.

Those two elements on the strike weapon side are very promising. As General Blot has mentioned, it opens new horizons for us in terms of how we use our platforms there, particularly high leverage elements for carrier aviation, in that we have a limited maga-

zine—although, we can certainly replenish it at sea without any great difficulty.

The idea that we can now start counting targets per sort rather than sorties per target is very exciting for us. It means that those 50 strike fighters, those we have on our carrier decks, are considerably higher leverage with the weapons that we were able to put on board in the forward deployed context and are able to respond to any kind of a contingency or crisis with a far greater range of accurate fire power and keep our air crews at a far less risk. It is an integral part of our road map for the future.

Senator WARNER. Given that the Navy has missions at sea, surface targets at sea, there is some uniqueness to your target ban that is not found ordinarily with the Air Force or the Marine Corps. Are you taking care of that?

Admiral BENNITT. Yes, sir. Our current capability is really very strong in the at-sea target component of the overall target set. The harpoon weapon system is a very capable weapon system deployed on a number of our aircraft.

Senator WARNER. I was thinking most in the jointness arena. You are not losing anything in jointness by virtue of your other requirements?

Admiral BENNITT. No, sir, not specifically. A number of the weapons we have today and we will continue to have in that environment will allow us to attack ships from standoff range. Nothing that we are doing on the joint side of the House would preclude that.

Senator WARNER. The answer I was looking for is that nothing on the joint side of the House will impair your mission for surface targets at sea.

Admiral BENNITT. No, sir, nothing at all.

Senator WARNER. The same question to the Department of the Air Force?

General MCCLOUD. Yes, sir, I fully support that. I would like to point out one other thing. The AIM-9X in the short range air-to-air missile arena—air-to-air is another program that has been worked with the other services. I am very, very pleased to say that the requirements are on track, and it is moving forward smartly.

Senator WARNER. Last year, we asked the Department of Defense for an evaluation of combining the Navy and Air Force in the F-22 Program. We have now been informed in an October 4 letter from the Department of Defense that it was just not feasible, and it would slow down the program. Give us a little more detail—we will start with you, Admiral Bennitt—on this program to look at a joint aircraft for the Navy. What happened?

Admiral BENNITT. Yes, sir. We discussed this briefly last year, and I know the Air Force has done some work in between that we have shared with them. Really, the issue I touched on briefly in a previous answer when I talked about the difficulty of redesigning an airplane and building carrier suitability into an airplane is essentially an all-up-round as we speak.

The cost of doing that is prohibitive. It is tantamount to starting a whole new development side by side with the F-22. For us we think that is the affordable approach, the practical approach is the

one that we are on right now that fields the F/A-18 E/F. We are confident that it will fly for the first time in December of this year.

It remains on cost and on schedule and is the right stepping stone to the future for us. It is then the complimentary element to an airwing that would include the JAST product, which we think is the affordable answer. That is the other element of the answer to your question on F-22 in a navalized variant, and that is purely the cost of the airplane itself. It would be very difficult for us to recapitalize that end of Naval aviation on an airframe that was not in the affordable category that General Muellner has spent so much time on already.

Senator WARNER. Do you wish to add anything?

General MCCLOUD. Sir, just that at this stage of the game we have completed the critical design review in February for the F/A-18. Roughly, 90 percent of the design drawings are fixed; essentially, the airplane has been designed. Metal is being cut, composites are being formed, and we will soon begin the process of putting together the first EMD aircraft. I think it would be very difficult to go back and start over again.

Senator WARNER. You could have two variants? It is what we call taking a plane and making it carrier-qualified. It would not necessarily have to be the identical airplane.

Admiral BENNITT. Yes, sir.

Senator WARNER. You could have that package needed to do the carrier qualifications. You might have to rework the wings. In other words, that program is off, done, finis, dead?

Admiral BENNITT. Sir, my opinion is, yes, that is correct.

General MCCLOUD. Yes sir, I agree.

Senator WARNER. General Muellner, do you have any comments? You are the one that is trying to look at the jointness.

General MUELLNER. No, sir. I think the big difference between the two is we have from the very beginning stressed our contractors and our designs to look for a tri-service solution space. As a result of that, things such as building in carrier suitability and the characteristics necessary for that, whether they be structural or aerodynamic, have been considerations right out of the trench.

There are, indeed, some compromises that have to be made that stress performance as a result of a multiservice application. The strength side of the carrier suitability task is going to require some very innovative and new approaches, I might add, to building and tooling some of these. Some of these that we have learned, in fact, from some dealings with the French in the RAFALE Program.

But these compromises were addressed from the very beginning in the JAST Program, and they were also addressed in the light of an air-to-ground aircraft which has different stressors on it than the air-to-air environment, where up-and-away performance is such a key parameter. Our key elements tend to be more focused on the range and on the avionics than the close-in maneuvering which stresses weight and some of the other performance characteristics that multiservice applications can impact.

Senator WARNER. Senator Levin?

Senator LEVIN. Thank you. First, on the Joint Munitions Program, which the chairman made reference to, you have got some new rules about making munitions joint. I think one of you made

reference to those rules. I think it was General McCloud, although I am not sure. Was it?

General MCCLOUD. No, sir, it was not.

Senator LEVIN. Well, whoever wants to tackle this. Apparently, there are some new rules which have been set up by the JROC on this issue, and I was wondering whether or not you would tell us about these new rules we have read about in the press?

General MCCLOUD. Yes, sir. It gets back to what you were talking about earlier, how do you have confidence that we are going to make JAST work as a joint program. I think that as you look at the various munitions programs we have just talked about—JSOW, JDAM, AIM-9X—there is a different mind-set amongst us in working the requirements for these programs.

In addition to that, the new player on the block, and a very important one, is the JROC. The JROC of course has the vice chairman and all of the vice chiefs sitting on it. Those of us that work requirements are feeding into that process. Any requirements document will be reviewed, if it is an important one, before that group. I think this is a fundamental change in the way we do business in requirements.

Now, specifically to the recent JROC ruling, the recommendation came forward that all future munitions would be interoperable. In other words, a Navy airplane coming off the boat, dropping its bombs on a target, diverting into some other base, would be able to pick up Air Force munitions and stick them on the airplane, take off, and they would be interoperable.

Often times now we cannot do that. It is smart to do that in the future, everybody has signed up to do that in the future, and I think it is a major step in the right direction. What that means to the Air Force is we now have to look at things like insensitive munitions.

Now, the Navy has been doing that for safety reasons for a long time. The tradeoff is it is a little more expensive to do that. However, the Air Force and the Navy in a joint procurement of insensitive munitions should be able to drive that cost down. That is the type of thing that we are looking at now.

Senator LEVIN. Do we have some examples in the Haiti operation that prove the wisdom of these joint munitions? Is there some case where the Army had to borrow some munitions from the Marine Corps? Can you fill us in on that?

General BLOT. Yes, sir, that is correct. Again, it goes back to the insensitive munitions. For the carrier to be able to operate any of its gear, the Army had to come to the Marine Corps for Hellfires that are different from the Army Hellfires in the case that they can operate in that environment. Hopefully with this new ruling, as we move forward and buy common ordnance, that will not take place anymore, sir.

Senator LEVIN. Now, what happened when they came for the different varying Hellfires? What was the effect?

General BLOT. We provided them. We took them out of our stores, and now the Army will go forward to replenish those at some future date.

Senator LEVIN. Did it create a problem because it was a different variant of Hellfire?

General BLOT. No, it worked. It is just that they did not have any in their inventory, and they had to take it out of our inventory to make that.

Senator LEVIN. The one in your inventory was the one they wanted?

General BLOT. That is correct.

Senator LEVIN. It was not as though they had to use one which was not the exact one they wanted? The exact one they wanted was not in their inventory?

General BLOT. That is correct.

General BLOT. If I may add, Senator, the real trick in this business with providing the interoperable and common weapons as close as we can is really to focus on what we are going to field in the future and doing the best we can with a large inventory of what we already own.

To a degree, we are doing that. A large amount of the inventory is interoperable to a greater or lesser degree, depending on how it was developed and which requirements it was made to fulfill.

We are looking at both the inventory of weapons that already exist; plus, as has already been pointed out, there is a considerable effort on the part of the JROC and an organization called the Joint Logistics Commanders who have been tasked—members of all three services, senior logistics of all three services, who have been tasked—with identifying these areas of commonality and interoperability that we need to pursue. We are having to stand up both as requirements generators and as program managers to these interoperable requirements. It is exactly the way we should be going. It will take us a while to get the entire inventory to that level, but we are moving as a uniform body towards that goal.

Senator LEVIN. General Muellner, back to the JAST Program. You made a reference to stealth technology in your one chart on some of the impact of these reductions, I believe. How important will stealth be to JAST?

General MUELLNER. Sir, the answer to that really depends somewhat on the specific service needs. But I would offer to you that with the technologies that I was talking about there will probably be more of an issue on the Navy side than, say, to the Marine side on the other end.

The Navy's need for a survivable first day operating capability probably demands a higher signature level, i.e., lower signature in this case, a more stealthy aircraft than the Marines, or for that matter even the Air Force would need for its primary role of interdiction.

I would anticipate, and what you saw in that one chart, was the fact that the Navy variant of the airplane will have more attention to and more weight and cost associated with things like edge treatments and materials that will provide signature reducing capabilities than the other services would.

In the case of the Marine Corps aircraft, we had some limits as to how much of that we can put on it and still satisfy the other characteristics as far as the vertical operations.

The answer really varies across the services. I would say that for the basic airplane, though, the baseline airplane is going to be moderately stealthy, even without a lot of these edge treatments,

and that is the real technology leap we have been able to make over the last few years. If you design the shaping end right, you get moderately LO signatures. Then, by the addition of the additional material and edge treatment, you can drive those into the VLO range.

Senator LEVIN. Thank you.

Senator WARNER. Thank you, Mr. Levin. Senator Kempthorne?

Senator KEMPTHORNE. Mr. Chairman, thank you very much.

General McCloud, good to see you again.

General MCCLOUD. Good seeing you, sir.

Senator KEMPTHORNE. General, I have heard from a number of people in the Air National Guard questioning the Air Force decision to retire the F-4G Wild Weasels. I think that they make an interesting point when they remind me that the Air Force faces a bigger threat from surface to air missiles, instead of air-to-air combat.

Despite this threat the Air Force plans to retire its best SEAD capability, the Wild Weasel, and spend billions on the next generation air-to-air fighter, the F-22. Given today's threats around the world, does this decision make sense? Also, is the F-16 an adequate SEAD platform for the Air Force?

General MCCLOUD. Sir, let us take the F-16 HARM targeting system problem first. As you know at Mountain Home Air Force Base the first Block 52 F-16s that entered the wing are being used today, and it gives us an excellent capability. If you compare the F-4G to an F-16, airplane to airplane, the F-4G has slightly better capabilities.

But the tactics and training that we are conducting now at Mountain Home have shown that the HARM Targeting System on the F-16 is really excellent. In fact, the wing just took the system down to a large-scale exercise at Nellis Air Force Base on deployment, and the results were some of the best we have ever seen for shooting the HARM missile. We are very high on the system. We also have a plan to improve the system with a couple of software changes coming very soon. I think it is a right investment for the Air Force.

The F-4G is an older plane. We would like to keep it longer, but in this fiscal environment we just cannot do it. The F-16 has a lot of capability beyond just HARM Targeting System. It can be rolled in air-to-air and also air-to-ground, so it is a multi-role airplane and very modern.

The investment strategy, I think, is a good one for the F-22, because the F-22 will take the fight to the enemy and operate in his air defense system. It will take away all of his advantages. By taking the airplane there, fighting the fight over his territory, and with standoff munitions we will be able to take down the enemy air defense system, both his fighters and his SAMs. I think the decisions we are making now with the HARM Targeting System is a good one.

Senator KEMPTHORNE. All right, thank you. Let me continue for another question here. We are talking about the existing inventory instead of perhaps the next generation. Is it possible that the Air Force may have been a little bit hasty in its decision to retire the EF-111? To what extent was this decision budget-driven? Is the

Air Force reconsidering that decision today? Is there any thought being given to moving some of the EF-111s into the Air Guard?

General McCLOUD. Sir, the decision on the EF-111 was a very tough decision. It has been looked at for some time now, and it is a fiscal decision. We are working with the Navy very hard now on a single platform, the EA-6B. We have plussed up the force structure of the Navy, roughly now at 100 EA-6Bs. We are now going to 120.

Secretary Deutch has asked us to go back and look at what improvements we would make with the EA-6 and also what concept of operations we would use. We are working that hard, and the Air Force and Navy will report back to him the middle of June.

I do believe that it is a good decision. The EF-111 and the F-111F are aging airplanes. In this fiscal environment, we cannot afford to maintain them any longer. We do believe that with the combination of EA-6B, standoff munitions, and precision-guided munitions that we will be able to handle the SEAD problem.

Senator KEMPTHORNE. OK. General, regarding the proposed Idaho Training Range, which you are certainly familiar with being a wing commander at one time, and you did an outstanding job there, can you describe for me how the range would improve the quality of training, and therefore the readiness of the 366th Composite Wing?

General McCLOUD. Well, sir, that is something that dominated my thoughts for a period of a year and a half. The ranges that we have now at Mountain Home now are good ranges, but they can be made much better by having the Idaho Training Range proposal adopted.

Currently, to do the large force packaging that we need for this leading edge wing, one of the first wings to go to combat, we have to fly to distant ranges, to the Utah ranges or the Nellis Air Force Base ranges down by Las Vegas. The cost of that is the driving time to and from the ranges.

As a wing commander, I would rather spend that driving time in high-intensity training, subjecting my air crews to that intensity on a range close to home. There are not only economies in doing that, but there is a great benefit of training that close to home. I think ITR offers that opportunity if adopted.

Senator KEMPTHORNE. Is it accurate to say that the amount of time that pilots now are actually in the air has been reduced, and therefore if that is a finite commodity that this idea of spending time flying in a straight line to a training range really is not the best use of their finite time in the air?

General McCLOUD. Sir, it is good to do that driving every once in a while: to do the air refueling, the navigation, and those types of things. Infrequently, that is good; frequently, that is a waste of time. The time is better spent in the high-intensity training close to home, and that is what is offered by the Idaho Training Range proposal.

Senator KEMPTHORNE. Does it have, perhaps, a negative impact to the actual readiness of the individual pilots?

General McCLOUD. It means that he or she will spend less time in that high-intensity training, given the finite hours.

Senator KEMPTHORNE. Okay. Thank you.

Admiral Bennett, the F/A-18 E/F is looked upon as the Navy's strike fighter aircraft for the next decade. What is the range of the F/A-18 E/F, its payload, and will it have a night attack capability? Also, will the F/A-18 E/F be able to attack modern, heavily defended targets by itself?

Admiral BENNITT. Well, I think the best way to discuss the range and payload, since it is highly dependent on the configuration and the mission in which you analyze range or payload, is to try to compare it to what we have today in the CD. The E/F will add about 50 percent range to the current capability of the CD and add an additional two wing stations to take the wing stations in terms of payload from 9 to 11.

We increase the nominal range in a given mission by almost 50 percent and have flexibility and additional two wing stations. Plus, we have the ability to return to the carrier with considerably more weight, almost twice the weight that we are able to return to the carrier now with the CD.

It gives us considerably more flexibility, especially in the kinds of operations that we are looking at today, where we are carrying significant numbers of smart weapons for long periods of times, and with the contingency kinds of operations we are involved with in returning those smart weapons that are very expensive to the decks of the carrier.

From the point of view of payload, we get the additional delivery capacity with the additional wing stations, the additional range endurance that goes with that, and the ability to bring it back to the ship. In addition to that, we get the flexibility to add even additional weapons capability and air-to-air capability that comes with a growth capability in the computers that we have with the airplane. It is a very significant increase in our overall tactical capability.

It does, in fact, field a night fighting capability that we have in the LOT-19 CD Hornets that we are fielding today with the radar upgrade that comes with that airplane, the Hornet radar upgrade. It will have an enhanced targeting capability, both day and night, which will enhance its night capability.

Senator KEMPTHORNE. All right. Thank you very much. My time has expired. I appreciate the responses, gentlemen.

Mr. Chairman, thank you.

Senator WARNER. Thank you. If you desire additional time, I will be glad to yield to you just as soon as your colleague is finished.

Senator LIEBERMAN. Do you want to finish up? I will be glad to yield now.

Senator KEMPTHORNE. All right. Thank you very much.

Mr. Chairman, thank you.

General McCloud, if I may come back to a few more questions for you. I have read reports suggesting that the F-22 should be delayed, because we will be building aircraft before significant parts of the testing program have been completed. Could you respond to these reports?

General MCCLLOUD. Yes, sir, the issue of concurrency in the program. The program was originally designed for 7 years of engineering manufacturing and development, EMD, and that was based on the technical tasks to be done. It is currently at 11.5 years. From

the Air Force point of view, it has slipped quite a bit, and we see very little risk in the level of concurrency we have in the program now. In fact, we are very comfortable with the level of concurrency we have.

Senator KEMPTHORNE. General, with your firsthand knowledge of the composite wing, your thoughts about mixing the F-22s into the composite wing?

General MCCLLOUD. I would love to see them mixed in the composite wing. Because the nature of the wing is being the first one to deploy to an area of crisis I would, number one, like to deter the enemy; number two, if I have to fight the enemy, the most important thing I need to do first is gain air superiority. I want to do it on his territory, on my terms. I do not want an even fight. I want all of the advantages on my side. The F-22, I believe, gives me that.

Senator KEMPTHORNE. Okay. Thank you.

General Blot, can you tell me why the HARRIER Follow-On Program is so important to the Marine Corps?

General BLOT. Yes, sir. Again, I go back to the need to be responsive to the ground troops. There are several ways of doing that—one is to blacken the sky with airplanes. Financially, the Marine Corps cannot afford to do that. The other is to park them closer on expeditionary airfields; we are pursuing that. The third is to be able to go and have the flexibility to land and take off where you feel like it. The AV-8 gives us that, and that has proved very valuable to us. For example, in Southwest Asia we were able to bring some 80 airplanes into theater that would not have been able to fit in there because all the conventional airfields were used. We want to expand that capability to allow us to go with the troops on amphibious bases and into Third World countries where there is literally no infrastructure for us. We are, essentially, 25 years into a 40-year program that will culminate with a product out of JAST called the ASTOVL strike fighter.

Senator KEMPTHORNE. All right. Very good. Thank you all very much.

Senator Lieberman, thank you for your courtesy. Mr. Chairman.

Senator LIEBERMAN. Not at all. I will reclaim that three minutes at some critical moment in this session. [Laughter.]

My pleasure. Thank you. Thank you, Mr. Chairman.

General Blot, I appreciate very much the paragraph in your prepared testimony about the CH-53Es and the Corps' decision to make the choice to build two more of the Super Stallions for the Reserves, rather than closing down that line or spending the money in the budget to close down the line. You do mention, correctly, that this is America's only heavy helicopter production line. At the end you say, "We are evaluating alternatives to keep the line open at a small production rate to procure enough CH-53Es to outfit our two reserve heavy lift units."

Two questions regarding that: What is the long-term demand or requirement likely to be for the heavy lift capacity; and then second, what kinds of thoughts do you have about keeping the lines open?

General BLOT. Well, we need to mirror image the Reserve squadrons so they will be usable in time of war. If they are not mirror

imaged we set up a whole new logistics system when they come to augment us. Right now, the last remaining units in the Marine Corps Reserves that are not the same as the Active forces are two RH-53D squadrons that we would like to convert to CH-53E, which the active forces are flying.

Senator LIEBERMAN. Right.

General BLOT. Our hopes are that we can, through the Reserves, increase those two squadrons to 8 airplanes apiece and then have 2, so a total of 18 CH-53Es, and that will complete our program.

Our need for the heavy lift helicopter is what lifts things that are over 10,000 pounds for us. As long as that requirement exists, for retrieving LAVs and moving M198/M155 artillery pieces, we are going to need a heavy lift helicopter.

Senator LIEBERMAN. That is obviously a critical necessity.

General BLOT. Yes, it is.

Senator LIEBERMAN. You have got to be able to do that. I appreciate your answer, and I look forward to working with you on that to achieve that goal.

General McCloud, I am sorry to be late, and I did hear some of your testimony about the F-22, which I have supported and will continue to support. I wanted to ask you if additional funding became available, which is possible, in terms of your priorities, where would you rank the F-15E in the tactical fighter aircraft?

General McCloud. Sir, the F-15E model is very important to us. Right now, that is ranked very high. We do not have any attrition filler airplanes for the F-15E; we think that is critical. We also have just recently taken six airplanes out of our combat coded side into a training status to meet our training demands. That is unusual.

If we attrit airplanes over the next 20 years for the life expectancy of the F-15E, we think we are going to need 18 to 20 F-15Es. Otherwise, we are going to take it right out of the combat coded airplanes. We think it is very important.

Senator LIEBERMAN. Excuse me. The F-15E, as I recall from earlier review, performed a very important role in Desert Storm; is that right?

General McCloud. Yes, sir, it sure did. It carried a lot of the heavy iron deep into enemy territory. The airplane now, across the fleet, is equipped with the LANTIRN System to allow it to fly 24 hours a day. Very capable. It is the cadillac of deep interdiction.

Senator LIEBERMAN. Great. Thank you.

Thank you, Mr. Chairman.

Senator WARNER. I am going to remain, so I am going to defer to my colleague here to ask a few questions, and then I will return and conclude my questions.

Senator LEVIN. Thank you, Mr. Chairman, for your usual courtesy.

General Muellner, we were talking about the stealth capability of JAST and you made reference to the Navy need, and I am wondering about the interim Navy need for stealth capability. That is missing and we are not going to have JAST for I am not sure how many decades, but it is going to be a long time.

I am wondering what the Navy might do in between now and JAST in terms of stealth capability? Is there any interim capability

the Navy can obtain that would give it some stealth capability? Would either of you comment on that?

Admiral BENNITT. I would be glad to.

General MUELLNER. Yes. I think Admiral Bennitt would best answer that, sir.

Senator LEVIN. Admiral?

Admiral BENNITT. I think in terms of pure stealth the answer is that we need a product out of JAST. In terms of significant signature reduction, the F/A-18 E/F goes a long ways towards moving us in that direction.

While I am not prepared to discuss at any level of detail the degree of signature reduction present with the E/F, I would very much like to take that question for the record or come back and talk to you privately.

The fact of the matter is that we have as part of the evolutionary development of the Hornet itself brought continued signature reduction, especially in the forward quarter, to the fleet.

The E/F will bring considerably more signature reduction, which will allow us to bridge that gap between the present and the fielding of a stealth product, a true stealth product, through the JAST Program.

Senator LEVIN. General Muellner, you made reference to significant savings in the JAST Program. Do you have a target aircraft price or some kind of a cost savings estimate that we would achieve from this joint effort?

General MUELLNER. Sir, we have both. If you will not hold me to it, until this fall when we will have some good numbers—

Senator LEVIN. Just between you and me. [Laughter.]

General MUELLNER. And the 12 journalists in the room. Yes, sir, I understand. We anticipate right now from all of our contractors and from our government analysis, that depending on how the service requirements sort out, the JAST products are going to come in between \$30 and \$40 million. I would anticipate the Air Force CTOL to definitely be at the lower end of that. Depending on exactly how much signature reduction and avionics is required, the Navy airplane will be up at the higher end of that.

Senator LEVIN. Is that in current dollars?

General MUELLNER. That is in fiscal year 1994 dollars, and that is a unit procurement cost for that. To answer your broader question, I think what we saw from the analysis, from this tri-service approach, that by adding the new technologies that we have funded in the program right now is compared to three independent service programs reduction and life-cycle costs of anywhere from 33 to 55 percent.

Anywhere from a third to a half can be reduced by this tri-service approach. That is a combination not only of the commonality issue, but also these cost-reducing technologies that are being brought to the table.

Senator LEVIN. Thank you.

General McCloud, I want to get to the F-111 retirement issue which has been raised. Are you looking at some alternative in terms of the lost capability? For instance, are you looking to extend the range of the F-16s?

General McCLOUD. Well, sir, as you know General Dynamics has been doing some work on their own to look at tanks that you carry on top of the wing, and they have successfully flown those airplanes at extended ranges. However, we are currently satisfied with the range of F-16s.

Some things that are very important have happened since Desert Storm; and that is, we have better standoff capability, which means that we can fire munitions into the threat array without having to penetrate. Number two, we have added the B-2 bomber and will soon have excellent PGM capability at the turn of the century and finally, we believe that the F-15E will meet our long range interdiction.

Senator WARNER. Would you let me interrupt with just a story?

Senator LEVIN. Sure.

Senator WARNER. You know, every now and then a little story provides, I think, a degree of humor and maybe a little knowledge. I cannot get the facts straight. If he wants to straighten this out, he can feel free to do so. General Fogleman came to see me in the course of his courtesy calls. We talked about the 111, because I happen to be very high on that aircraft.

I visited with the squadrons in England immediately following that very successful raid in Libya. He said to me, in a joking way, that he reported to the Pentagon when he was a new brigadier. His first assignment was to work up a program to retire the 111, and he carried that order out.

He went off to another assignment. When he came back and was a two star at the Pentagon, his first assignment was to work up a program to keep the F-111. He said things go in cycles. I have always thought that is a very interesting little story. Now, he may want to correct exactly when it was, but the framework I have.

General McCLOUD. Yes, sir. It is my job this time. [Laughter.]

Senator LEVIN. Someone a couple of years from now may have the opposite.

Senator WARNER. That is right. Sort of like the battleships that I brought out, retired, brought out, and retired.

Senator LEVIN. I wonder whether some of the senators that have retired are going to—well, never mind. [Laughter.]

That is kind of a painful point today, because one of our colleagues announced that he is not running for reelection, Howell Heflin.

Senator WARNER. A wonderful man.

Senator LEVIN. Just a terrific guy.

General McCLOUD, you have indicated that JAST will produce the Air Force's next generation attack fighter to replace the F-16 and just recently you commented also on extending the range of the F-16. Is there a requirement now for new F-16 procurement?

General McCLOUD. Sir, the requirement is this, if we look at the F-16 force structure we have today and look at the need to maintain 20 fighter wing equivalents throughout the life expectancy of those airplanes, we are short on attrition airplanes. That becomes very serious as you go from the year 2000 to the year 2010.

We find, in fact, that we are ending up short about 1.5 to 1.6 wings of combat coded airplanes short of the 20. What we think we

need is roughly 18 to 20 F-15Es for attrition fill, and on the F-16 side we need approximately 120 airplanes.

Senator LEVIN. Does that mean that we do have a requirement for new F-16s now?

General MCCLOUD. Sir, I think we have a requirement for those F-16s; however, in this fiscal environment, it is a very tough thing to get your arms around with the competing interests. The bottom line is if we continue the way we are continuing, we eventually eat into combat coded airplanes and thus draw down our combat force structure.

Senator LEVIN. You get into what?

General MCCLOUD. Combat coded airplanes.

Senator LEVIN. Oh.

General MCCLOUD. In other words, we start eating the airplanes that are in the combat side of the force structure?

Senator LEVIN. Do we have right now a surplus of F-16s in the attrition reserve? Maybe not the latest models. But do we have a surplus of F-16s?

General MCCLOUD. Some of the older models, the A models, are excess right now. As you know we have the Coalition Buy Program that is still being looked at. Some countries have shown an interest but there have been no takers thus far.

Senator LEVIN. General Muellner, how much of the F-22 program is going to be incorporated in the JAST?

General MUELLNER. Sir, to begin with all of the propulsion system approaches employ either the 119 or the 120 engine, which is straight out of the ATF program. The core engine that the JAST aircraft will use is going to be straight out of that ATF.

Additionally, on the avionics side, we started out with the JIANG, which is the avionics architecture and system that is in the F-22. What we then did is open up that architecture to make more use of commercial processors and commercial software, since the avionics have been stepping along at such a great rate.

The answer is that we are making quite a bit of it on the propulsion side, certainly on the avionics side, some of the structural design approaches are straight from the F-22. We had a program to exploit the software and to reuse the software from the F-22. But, as I mentioned earlier, that was one of the ones that we had to eliminate or defer because of lack of funding.

Senator LEVIN. Mr. Chairman, thank you.

I just have one further question of General Blot. I notice you have a laptop computer in front of you. I want to know whether that is going to eliminate any requirement for staff at these meetings?

General BLOT. Yes, sir, it could do.

Senator LEVIN. I see some nervous people back there. [Laughter.]

General BLOT. It holds an amazing amount of information in here, sir.

Senator LEVIN. Well, I do not remember seeing a witness before with a computer in front of them. I want to commend you on it and tell you how much I admire you for doing that. It is quite impressive. Again, I have never seen that before with a witness. It is kind of intimidating. [Laughter.]

Let me just ask one question of General McCloud before I take off. We have made reference before, I think you made reference or somebody did, to tactical data links for Air Force fighters. In the past, the general perception is that the Air Force has resisted adding that capability, and the situation has derived partly from the added cost of installing equipment but partly because of cultural barriers.

I think maybe my question to General Blot is a good introduction to this. The added situational awareness that you made reference to, that sharing data among the various platforms—whether it is aircraft, ground forces, or whatever—has really great potential.

We have seen that in some ground configurations, too, by the way, out in the desert at the National Training Center. You have gotten some experience operating F-15s with tactical data links. Can you describe for us your experience in having aircraft equipped with those data links? I think you started to, or you may have made brief reference to it. But would you expand on that?

General MCCLOUD. Sir, when I went to the 1st Fighter Wing at Langley Air Force Base, we flew F-15s without the JTIDS, the data link. The F-15C is probably the finest air superiority airplane in the inventory today, excellent capability.

When the AMRAAM missile came on board that airplane, I felt it was revolutionizing air-to-air combat. When I went out to Mountain Home and flew the F-15 with the JTIDS terminals on board, they gave us the big picture and also the interflight picture in the cockpit real-time. I also felt we were going through another revolution.

That capability now is our number one priority on the big platforms and right behind that on air superiority platforms. The sharing of that data across the NET is a cultural change, an important one, and I think the right one.

Senator LEVIN. Is the Air Force now committed to getting these links installed in the fleet?

General MCCLOUD. Yes, sir. As I said, first priority, big platforms. We are also looking at the ground modules that you referred to and incorporating JTIDS. The JROC has recently standardized Link 16, which is the JTIDS link, as the joint standard.

Our air superiority airplanes, currently at Mountain Home, started out as a test. If you went out and tried to take one of those terminals out of the airplane right now, one of the pilots would probably tackle you and kill you, because it is that important to keep the capability. Yes, we are committed.

We are right now working the concept of operations for sharing information on platforms such as JSTARS with air-to-ground airplanes. That is not in the budget, but we are working the concept.

Senator LEVIN. Thank you.

Admiral, how about the Navy? Are you moving in the same direction?

Admiral BENNITT. Yes, sir. I could not agree more with General McCloud with regards to the revolutionary aspects of being able to share that kind of information, both cockpit-to-cockpit and in the fighter-to-fighter sense and to be able to share it with the big platforms, either the AWACS or the E-2, ultimately JSTARS.

I have not flown the JTIDS installation personally, although I have debriefed airwing commanders that have flown it and battle group commanders that have had JTIDS in their wings, and they agree that it is a quantum leap forward in our ability to share information and to leverage all of our resources to their fullest extent.

We are committed in the short-term to JTIDS with the F-14s and the E-2s and then in the joint program probably in the MIDS world. This will be ultimately a cooperative program that should not only bring that common capability between ourselves and the Air Force but ourselves and the allies as well. It is a vital step into the future for us.

Senator LEVIN. General Blot?

General BLOT. Yes, sir. We are following along with the United States Navy and equipping our airplanes as it becomes available.

Senator LEVIN. Is it a high priority for you?

General BLOT. Yes, it is. Battlefield situational awareness is extremely important to us, not only in our planning but in our making sure we reduce fratricide.

Senator LEVIN. Thank you.

Thank you again, Mr. Chairman.

Senator WARNER. I am going to confer with Senator Levin on another matter before the committee, so let us just take a two-minute stretch.

[Brief recess.]

Senator WARNER. Even though baseball has gone, the old stretch is long remembered. We will include some questions for the record, General McCloud, on the F-16 Program. Senator Hutchison, a valued member of this committee, will have some questions to follow along with those raised by Senator Levin. But I would judge the optimal situation is, you would start those buys very soon to preclude that gap occurring?

General MCCLOUD. Yes, sir. Exactly right.

Senator WARNER. It is therefore a question of a fiscal balance in your own accounts. General McCloud, again we will just go right back to you. Recent reports have mentioned that the F-22 was overweight, a critical design review, and there may be problems in developing an engine to meet the super cruise requirement of the program. Can you give the committee some information on these points and perhaps the assurance that the program can absorb and rectify these two problems?

General MCCLOUD. Yes, sir. The critical design review in February was highly successful, one of the best ever for an Air Force program. People were high on what they saw. The weight that you allude to was higher than we wanted.

Senator WARNER. Well, you must have had spec. Not what they wanted? There must have been a spec out there?

General MCCLOUD. No, sir. There is not a spec; there is not a requirement for weight.

Senator WARNER. There was not any bogey number on weight?

General MCCLOUD. No, sir. The requirement is for the desired combat performance, and that is where the requirements come in. The weight was too high, and we know that.

Senator WARNER. By what percentage?

General McCLOUD. Sir, I do not have that answer. It really gets back to the operational requirements. As you know, as weight grows, you start cutting into the operational performance of the airplane. We are now trying to understand exactly what that increase in weight means to the operational performance of the airplane.

Senator WARNER. Well, you can also work on fuel and some other things, I mean.

General McCLOUD. Yes, sir.

Senator WARNER. Get your range.

General McCLOUD. Exactly right. It is a complex equation, but the weight is not where we want it right now, and we know that. We have an aggressive program between the program office and the contractor to keep it in check. This is a critical phase because between CDR and first flight historically airplanes go up in weight, so we are watching it very closely.

Senator WARNER. Well, I think historically in the programs I have watched through 25 years in this business that weight has always come up each time, and sometimes the corrections that go into adjusting it really decrement the operational requirements.

General McCLOUD. Yes, sir.

Senator WARNER. Let us hope it does not happen. If you had it on a scale of 1 to 10, 10 being the worse and 1 being what you would hope, where is this weight problem?

General McCLOUD. It is of definite concern to us and I would say it is up there in the seven, eight area where we want to watch it closely.

Senator WARNER. Then you have got a problem.

I think we had better ask you to give this subcommittee an interim report on this weight.

General McCLOUD. Yes, sir.

Senator WARNER. I will draft the language. We are going to have to track this plane more carefully. Let us turn to the engine problem. My understanding you are using pretty much of a state of the art engine, right?

General McCLOUD. Yes, sir. A very high performance engine.

Senator WARNER. Well, you go ahead and explain the problem.

General McCLOUD. Well, sir, there is no problem in super cruise with the engine. As you know in the prototypes, the prototype F-22 was a fairly heavy airplane in comparison with the airplane that is being built now.

It also had quite a bit less thrust than the engine that we are building now. That airplane flew at very high super cruise speeds, so we are highly confident that the engine we have now will meet the super cruise requirements in this airplane. There is no problem with super cruise.

Senator WARNER. Well, let us take it on a scale of 1 to 10, 1 being what you would like and 10 being a problem, where is this engine problem?

General McCLOUD. There is only one engine problem that I am aware of.

Senator WARNER. Well, you would be aware of all of them, would not you?

General MCCLOUD. Yes, sir. It is in the area of specific fuel consumption. When you are up at military power, short of afterburner, in the super cruise regime, we are meeting all that we would like to meet; in fact, exceeding that. When you throttle back and go into cruise performance, we estimate that 2.0 percent off the specific fuel consumption needed.

Senator WARNER. What altitude is that?

General MCCLOUD. That is at cruise altitude around 35,000 to 40,000 feet. What we are looking at now is translating that into impact on the operational requirements. We will also give you a report back on specific fuel consumption.

Senator WARNER. I will ask staff to draft appropriate language to keep the committee informed.

General Blot, and as a matter of fact to each of you, over the years the committee has taken an active interest in airborne electronic warfare. An initiative by the committee a few years ago encouraged the Defense Department to consolidate Airborne EW into one program and to adequately fund that program.

Today, we have an aged EA-6B fleet with much the same capabilities as in the years past. While the threat expands and becomes more sophisticated, at the same time the Air Force plans to cancel upgrades and retire the EF-111. Would each of you provide this answer, What is the importance of airborne electronic warfare to your tactical aviation program? What capabilities will you have in the future to address the threat?

General BLOT. Sir, if I could start, we have the ground-based EA-6Bs. There are 20 of them in the U.S. Marine Corps, and we have the vans to move them wherever they need to be. There was an advance capability program that was a very expensive program, and in the fiscal environment was canceled because of unaffordability. What was left was the challenge to get the airplane structurally sound with minimum requirements such as GPS ARC-210 radars that have "Have Quick" SINGAR capability.

The next step is to try to expand its jamming range a little bit lower and a little bit higher and add some command and control capabilities, destruction capabilities to the airplane. That is a long-range plan. It is common with the United States. We are in lock-step with them; whatever one does, the other will do.

Senator WARNER. Admiral?

Admiral BENNITT. Yes, sir. As I mentioned earlier, in focusing on the EA-6B we have increased the number of aircraft we will support over the long-term. Our plan had included support for 100 EA-6Bs. As a result of the budget decisions that support POM 96, we have upped that number to 120.

We will take them all to the common configuration that General Blot has mentioned. There is an upgrade in the low-band jamming capability that is included in that process, so there is a war fighting improvement coupled with the increase in inventory numbers.

We have an ongoing study in which the Navy has participated along with the Air Force and the Marine Corps that looks at the total spectrum of electronic warfare from self-defense to standoff jamming to even, well, include the lethal aspect of EW, as well as tactics. That study, the Joint Tactical Electronic Warfare study, is due to report out in June. They have been spending the last four

months in an extensive modeling and simulation and analysis effort that should help provide a road map for how we can continue to upgrade the EA-6B platform.

We have provided the subcommittee a list of options basically graded in terms of the cost of each one of those options in the war fighting capability that they would bring to the table. I think that coupled with the Joint Tactical Air Electronic Warfare study will help us refine those requirements.

In the meantime, the process of maturing the threat that the AVCAP General Blot has talked about would have addressed had we fielded it, that threat has not matured at anywhere near the pace that we had predicted.

As General McCloud has mentioned, we have continued to field accurate and precision weapons and we will make a giant step in the 1998-1999 timeframe with JDAM and JSOW IOC, so our standoff weapon capability, both accurate and precision, has improved significantly or will in the immediate future.

Those coupled with improved self-defense capabilities, General McCloud mentioned some of the capabilities that the Air Force airplanes will field, we are fielding improved tactical capability with the EF that will be retrofitable onto the CD.

That coupled with signature reduction gives us a considerable degree of confidence that we can address the threat in the near and midterm and the results of the studies that are ongoing now should help focus our efforts on what we will do with the EA-6B in an affordable manner to help it contribute to the road map of the future.

The airplane will, the EA-6B in our plan, be beyond 2010, so there is room and time for improvement in that system to match the threat that would be fielded in that time.

General McCLOUD. Sir, the only thing I would add is that it is apparent to me and I think all of us that whatever solution we have, and we believe the EA-6B is the right solution, has to be a joint solution at this point in time in the environment that we are in.

Senator WARNER. Let us return again, General Muellner, to the JAST and address the Navy's requirement for a stealthy strike fighter to complement the F/A E/F in the category of a deep strike aircraft. How likely is JAST to be able to meet the requirement, as well as the Air Force and the Marine Corps requirements?

General MUELLNER. Sir, we are indeed optimistic that we can do that. We have an extensive base of modeling and simulation activity which actually involves the requirement staffs of all three of the services. They are the ones that participate and execute those gaming activities.

I think, as Admiral Bennitt already pointed out, those people that report back to the Navy leadership indicate to them that they believe we can meet that. This family of airplanes approach, the family that will, variant if you will, address the Navy's need and will indeed have the stealth characteristics and the precision weapons capability to allow it to operate on day one of the conflict.

I think we can provide that and the payload radius that we are talking about for these aircraft are going to allow it to cover the key elements of the battlefield unrefueled. I think we are, indeed, going to meet that Navy need directly.

Senator WARNER. Gentlemen, I will submit some additional questions to each. Thank you very much. I commend you. Just think how many officers would give anything to have the jobs that you have. It is really on the cutting edge of technology, and particularly in aviation. You earned it.

I am concerned about the future of the Tactical Aircraft Programs across the whole spectrum, particularly the Navy. It was a sad day when we had to cancel some of our programs here several years ago. Thank you very much.

I wish to commend the committee staff for excellent preparation. The committee stands adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN WARNER

JAST

Senator WARNER. The present goal of JAST is to produce a carrier aircraft, suitable for first day strikes, for \$40 million dollars. That would be an incredible feat in any program, much less one faced with competing requirements.

If it seems that JAST might not be able to meet Navy requirements for a survivable deep strike aircraft, are there any existing alternatives that could be used or modified for the role so as to capture development that has already been done?

Admiral BENNITT. Yes. There have been several programs that could have developed a carrier suitable, first day strike aircraft. The level of development cost varies as does the recurring flyaway costs for the resulting aircraft. Had any of those proposals shown significant reductions in Research and Development costs, with significantly lower cost variants during the AFX program, they would have been extremely competitive during the Bottom-Up Review. Within the existing funding constraints, the JAST program has the highest potential to affordably fill our warfighting needs.

F-22 FLYAWAY COSTS

Senator WARNER. General McCloud there have been differing estimates of the flyaway costs of the F-22. Considering the changes in the program to date, what do you estimate the flyaway costs of the F-22 to be if the full 442 aircraft program is executed?

General MCCLOUD. We estimate the unit fly-away costs of the F-22 at \$71 million (Budget Year 1995) a copy.

JAST PROGRAM DEFINITION

Senator WARNER. General Muellner, the JAST program has recently progressed from concept exploration into the requirements generation and validation process. What will be the critical two or three events between now and the award of the EMD contracts to produce test aircraft? What has to go right, what could go wrong?

[General Muellner did not provide a response in time for printing. When received, answer will be retained in committee files.]

F-111 ATTACK CAPABILITY

Senator WARNER. General McCloud, the F-111 enjoyed wide support of the Unified Commanders for its ground attack capability in the past, yet it is now slated for retirement by the Air Force. What has changed?

General MCCLOUD. The decision to retire the F-111 was a budget driven decision. The F-111 is a very expensive aircraft to maintain. F-111 flying hour costs are over twice that of the F-15E. Since the Gulf war, the Air Force increased the number of precision guided munition (PGM) capable fighters (F-15E and F-16 block 40/42) by 400 percent. In Desert Storm, the F-111F represented 55 percent of our PGM capable fighter aircraft; today it is only 13 percent of the PGM capable combat force. In addition to the increase in PGM capable fighters, the Air Force is in the process of modifying the B-1 and B-2 to employ PGMs. The B-52 is already PGM capable. The shorter range of the F-15E misses only a fraction of the targets, which can be reached by bombers and stand-off cruise missiles. The F-111 is an aging airframe. It is too expensive to continue to maintain.

JUST AND DEEP STRIKE FOR THE NAVY

Senator WARNER. General Muellner, the Navy's JAST requirement is for first day of war is a stealthy, strike fighter to complement the F/A-E/F. I understand that to be a stealthy deep strike attack aircraft. How likely is JAST to be able to meet that requirement as well as the Air Force and Marine requirements?

[General Muellner did not provide a response in time for printing. When received, answer will be retained in committee files.]

Senator WARNER. General McCloud, the GAO last year told us that the F-22 would displace F-15s with years remaining service life if it were fielded on the present schedule, and at any rate there is insufficient threat to justify the program on its present schedule. While the Air Force is committed to the program in its present form, and says any delays will cost in the future, wouldn't a planned delay of 4-7 years actually save money?

General MCLOUD. First, let me comment on the threat. The Air Force, as we reported last year, continues to believe the GAO report contains fundamental weaknesses that undermine its usefulness for making sound decisions on fighter modernization.

A slip of 4-7 years to the F-22 program would result in significant cost growth. A 5 year slip could reduce required FYDP funding for the F-22 by approximately \$6.7 billion. This short term savings would result in cost growth of \$16.9 billion. Production funding would increase by \$13 billion (\$8 billion due to inflation and \$5 billion due to overhead increases and the cost due to loss of experience in the F-22 work force) and \$3.9 billion would be required to extend the EMD program.

There would be other costs to the Air Force as well. Slipping the F-22 results in a procurement spike with simultaneous acquisition of F-22 and the next generation attack fighter (NGAF). The F-15 and F-16 programs would also experience significant cost growth. NGAF IOC would need to slip 5 years resulting in the need to buy additional F16s or extend service life for F-16s in the FYDP. The F-15 would require \$5.8 billion + to extend service life (includes avionics, airframe, engine upgrades). The F-16 would require upgrades to extend its service life as well.

JAST REQUIREMENTS

Senator WARNER. General Muellner, it seems from briefing materials prepared earlier this year, the Air Force is reducing the types of aircraft it intends to replace with JAST. What would happen to the program if one of the three remaining service requirements were dropped from the JAST program?

[General Muellner did not provide a response in time for printing. When received, answer will be retained in committee files.]

QUESTIONS SUBMITTED BY SENATOR SAM NUNN

C-130J PROGRAM

Senator NUNN. General Blot, The Air Force budget includes procurement of two C-130J aircraft to begin modernization of the Active Air Force's aging tactical airlift fleet.

Has the Marine Corps looked at purchasing the C-130J to fill any of its needs? How large is the fleet of Marine Corps KC-130 tankers, and how modern is that fleet?

How would the Air Force C-130J have to be modified to meet the Marine Corps' mission?

If you were to begin modernizing the Marine Corps tanker fleet with a C-130J variant, what would be your acquisition strategy? What would be a reasonable production schedule?

How many new tankers would the Marine Corps need?

What would be the cost of a KC-130J tanker for Marine Corps use?

[General Blot did not provide a response in time for printing. When received, answer will be retained in committee files.]

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

WHY DOES THE AIR FORCE NEED THE F-22?

Senator LEVIN. General McCloud, when I look at DOD's tactical aviation modernization plan, I'm not sure I understand why the Bottom-Up Review concluded the Air Force has to implement the course of action that you have taken on the F-22

program. I must infer from the fact that the BUR canceled the Navy's AFX program that DOD has decided that the Navy does not need a near-to-mid term stealth capability at all. This is despite the fact that Navy carriers may be the first forces on-scene and may be required to operate alone until other forces from CONUS can be surged to forward operating bases. The Navy has no aircraft that fit into the "stealth" category. The Air Force, however, already owns the F-117 and B-2 aircraft, which could be relied on to provide whatever stealth capability is needed. In view of the fact that DOD is not developing near to mid-term stealth capability for the Navy, why does the Air Force need the F-22 before the JAST program will produce additional stealth aircraft alternatives to add to those systems the Air Force already owns?

General McCLOUD. Following the Bottom-Up Review, the Department canceled the AFX due to budgetary constraints and elected to pursue a new, more affordable approach to joint service warfighting needs. The F-22 program was continued because it was determined to be affordable, as well as being a critical asset in ensuring future U.S. warfighting success.

The Air Force expects JAST to provide the "building blocks" for the joint development of a family of affordable air-to-ground aircraft for the USAF, USN and USMC. While it could compliment the F-22 in the air superiority role, JAST is focused on affordable next generation strike weapon systems. Specifically, the Air Force expects JAST to facilitate the development of an affordable multi-role aircraft to replace the F-16. Because JAST will be optimized for the air-to-ground role and be designed for multi-service, multi-role missions, it won't be as capable in the air superiority role as the F-22.

We cannot predict the intent of potential adversaries in the future. Because we cannot predict where and how we might next be required to defend our interests, we must maintain a strong and capable force. As we become a more expeditionary force, it is critical to immediately establish air superiority for protection of our lodgment as well as to allow the Joint Force Commander to leverage all the other capabilities he has at his disposal. The potential threat to air superiority includes advanced aircraft, air-to-air missiles and surface-to-air missiles. Because of its stealth, supercruise and integrated avionics the F-22 will be able to dominate potential threat aircraft while operating in the SAM environment.

Senator LEVIN. General McCloud, in a memorandum to the J-8, dated August 5, 1994, Lt. Gen. Jay Garner, USA, raised some serious questions about the need for the F-22, particularly in light of the "greatly reduced air-to-air threat we would face in either a Major Regional Contingency or virtually anywhere else in the Third World. . ." His memo goes on to say the Army does not understand the need for the F-22, and questions the advisability of investing so much in a single mission fighter. Although the letter does not assert this, I believe that the Army thinks that enemy air defense systems will be suppressed by Army long-range precision fires, and hence there is less utility in the stealth technology that the F-22 seeks to exploit. General Garner's memorandum suggests that the JROC conduct a major review of the fighter recapitalization strategy.

Did the JROC conduct a review of the fighter recapitalization strategy?

General McCLOUD. While Joint fighter recapitalization has not specifically been reviewed in the JROC, the requirement for the F-22 has been reviewed and revalidated by the JROC.

The Strike JWCA focused on the Air Force's ability to maintain 20 FWE. Within the current program, the Air Force will fall below the inventory requirements for 20 FWE in fiscal year 2001. The Air Force is exploring options to maintain required force structure levels within projected procurement accounts. The timing of the Next Generation Attack Fighter (NGAF, the aircraft resulting from the Joint Advanced Strike Technology, JAST, program) and F-22 is critical to this strategy. Any delay in either the JAST/NGAF or F-22 programs will require significant funding increases.

The Air Superiority JWCA has discussed the effects of F-22 funding slips on the warfighter and development programs such as JAST. Both JWCAs concluded that slips in either program would prevent the Air Force from meeting its force structure requirements and would require additional aircraft structural life extension program funding. This would seriously reduce the Air Force's ability to meet wartime tasking.

Senator LEVIN. How does the Air Force respond to the charges made in General Garner's memorandum?

General McCLOUD. First, the F-22 will not be a single mission fighter. It will have near-precision strategic attack capabilities comparable to those of today's F-117, but those capabilities will also be completely all-weather.

Second, the Army would be the first to tell you it cannot survive with massed enemy air overhead. Ground based air defense is a last-ditch attempt to prevent enemy air attack; air superiority fighters are the first line of defense, attacking enemy air power before it reaches our ground forces.

Third, Army deep fires will not reach enemy airfields. The heart of any enemy integrated air defense system is also beyond the reach of Army deep fires. An integrated air campaign is required to suppress a modern air defense system. Air superiority requires properly employed air superiority fighters, as we learned at Kasrinen Pass. The F-22 will be a vital part of future air campaigns.

Some have asserted we face a greatly reduced air-to-air threat in any future conflict. I believe this is untrue. According to the DIA-validated F-22 System Threat Assessment Report, there is an increasing threat to U.S. air superiority, not only from enemy fighters but from surface-to-air missiles and improved air-to-air missiles. The F-22 will maintain the ability of the United States to dominate the air battle through the first half of the next century.

ROLES AND MISSIONS (RAND REPORT)

Senator LEVIN. Admiral Bennitt, last year's RAND report called *The New Calculus* seems to suggest that CONUS-based bombers will make a greater relative contribution to future warfighting capability because of new technology, such as smart weapons. It further implies that ground and naval forces may have to be cut to provide the funds to implement this strategy.

If the Navy does not have the qualitative capability that would be provided by a stealthy attack aircraft in the near- to mid-term, won't the Nation be forced to make exactly this trade between naval forces and the air forces?

If the Air Force needs the F-117, the B-2, and still needs to develop and field the F-22, how can the Navy afford to do without stealth technology in its primary aircraft systems until the joint advanced strike technology (JAST) program might result in some replacement for the A-6 (perhaps as late as the year 2015)?

[Admiral Bennitt did not provide a response in time for printing. When received, answer will be retained in committee files.]

EA-6B/EF-111

Senator LEVIN. This committee has been concerned about DOD's modernization plans for its electronic warfare aircraft. Several years ago, we suggested that DOD choose to provide a very robust modernization program for either of the two primary jamming aircraft, the Navy's EA-6B and the Air Force's EF-111. We feared that the Department, absent such a choice, would be forced into having two separate programs limping along with very little modernization. Last year, the Navy terminated its major upgrade program, the EA-6B advanced capability upgrade. For the Navy, it seems intuitive to me that the less stealthy an aircraft fleet you have, the greater is the premium on being able to jam enemy radars and communications systems. Now, the Air Force has canceled the EF-111 upgrade, and will apparently rely on some number of EA-6B aircraft. General McCloud and Admiral Bennitt, what has changed so dramatically since General Powell responded as he did to the committee?

General McCLOUD. Today's all too real budgetary constraints compelled the department to retire the F-111 in fiscal year 1997. We are working hard to finalize a plan that provides an adequate capability in this mission area.

[Admiral Bennitt did not provide a response in time for printing. When received, answer will be retained in committee files.]

Senator LEVIN. Why should we not be concerned at this turn of events? Why do you believe that we will have enough jamming capability with the current program?

General McCLOUD. Historically the Air Force has made a significant investment in aircraft self protection and warning equipment. Continued investment in these technologies provides significant protection to Air Force aircraft. DepSecDef Deutch has directed the VCJCS to conduct a study of the plan to retire the EF-111 force and substitute the EA-6B in the electronic warfare missions now being performed by the EF-111. This study will draw on the ongoing Joint Tactical Airborne Electronic Warfare Study (JTAEWS). Guidance and recommendations from this study will influence future efforts in airborne electronic warfare issues. Initial results of this study will be presented on June 15, 1995.

Senator LEVIN. General McCloud, what makes the Air Force believe that the Navy's modest EA-6B upgrade will be adequate to meet your needs?

General McCLOUD. DepSecDef Deutch has directed the VCJCS to conduct a study of the plan to retire the EF-111 force and substitute the EA-6B in the electronic warfare missions now being performed by the EF-111. This study will also assess the requirement for any needed upgrades to the EA-6B force. Initial results of this

study will be presented on June 15, 1995. We would prefer not to speculate on the study's findings prior to it being presented to the DepSecDef.

F-22 CONCURRENCY

Senator LEVIN. General McCloud, the Defense Science Board (DSB) report on F-22 concurrency concluded that major subsystems of an aircraft should achieve 10-20 percent of the planned testing before we make a commitment to scaling up production, which for the F-22 is Lot 2. The DSB found that, for the F-22, development of engines and passive avionics are the highest risk areas. The DSB report also indicates that roughly 20 percent of the avionics testing will be completed before Lot 2 contract award. Unfortunately, the report is less clear about the maturity of the engine testing. We are aware of some of the engine development problems dealing with specific fuel consumption and vibration. How much of the engine testing will be finished before award of the Lot 2 contract?

General MCCLLOUD. Approximately 99 percent of planned engine ground testing and approximately 67 percent of planned engine flight testing (for a total of 80 percent combined engine ground and flight testing) will be completed by Lot 2 production contract award in February 2000.

Senator LEVIN. Has there been a change in the level of testing maturity that will be achieved by the time of Lot 2 award with the recent DOD reduction of \$200 million in the 1996 budget?

General MCCLLOUD. No. The program plans to accommodate the \$200 million reduction by slipping the program schedule so that the relative levels of maturity planned before Lot 2 award remain essentially the same as before the reduction.

F-22 EVENT BASED CONTRACTING

Senator LEVIN. General McCloud, much of the Defense Science Board's findings about "acceptable overlap" between testing and production depends on requiring that the development and testing must pass certain key events identified in the DSB report. In the C-17 program, which was also supposed to be operating on an event-based schedule, the production imperative kept us signing contracts even though events were slipping. Why should the committee believe that the Air Force will maintain "acceptable overlap" in the F-22 program if the testing schedule slips?

General MCCLLOUD. The F-22 EMD contract incorporates the Integrated Master Plan (IMP) which contains 16 major program milestones, hundreds of significant events leading towards those milestones, and thousands of specific criteria that must be met to the Government's satisfaction before proceeding to the next event/milestone. Long Lead and Full Release for the first production lot currently require specific criteria to be met before they can occur. We plan to implement the same disciplined process for the remaining Low Rate Initial Production (LRIP) and High Rate Production (HRP) lots. Additionally, the DOD approved Acquisition Program Baseline (APB) already includes "exit criteria" that must be met prior to each LRIP lot Long Lead and Full Release. The "exit criteria" are high level indicators of whether the program is mature enough to proceed to the next lot. We are capturing this philosophy in our acquisition strategy which calls for specific criteria, primarily from the development test program, to be conditions for production lot increases. With this strategy, we believe we can execute a prudent production program which ramps up rate only when predetermined criteria indicate design maturity sufficient to commit to larger lot sizes. Consequently, production contract award dates will be based on schedule (driven by fiscal year funding considerations) and production contract award quantities will be based on whether or not specific criteria are met. For example, LRIP Lot 2 currently is planned for 12 aircraft. If specific development test program criteria are not met, the contract for LRIP Lot 2 will still be awarded on schedule, but for the same quantity as Lot 1 (4 aircraft). In this way the Government can avoid the extremely expensive delayed or stop/start contract award phenomenon experienced by previous programs, yet won't be risking significantly large numbers of aircraft to expensive retrofits found necessary from later testing.

The Air Force and the F-22 program have demonstrated their commitment to an event based discipline repeatedly. For example, the end of the predecessor Advanced Tactical Fighter (ATF) Demonstration/Validation phase was slipped 6 months when necessary demonstrations had not been completed on time; the F-22 Air Vehicle Preliminary Design Review (PDR) was slipped 3 months because necessary criteria had not been met; several subsystem Critical Design Reviews (CDRs) were slipped varying amounts of time when contractual criteria hadn't been met; and the Air Vehicle CDR, while held on schedule, is being kept open until all criteria necessary to close it have been satisfied.

The Air Force is committed to this criteria/event based program structure. The F-22 program has shown that the Government is well served by this approach and will continue to benefit in the future.

Senator LEVIN. Is the Air Force committed to sticking to achieving testing events as a necessary prerequisite to signing F-22 contracts?

General MCCLOUD. Yes, the Air Force is committed to an event driven schedule.

F-22 PROGRAM PHASING

Senator LEVIN. General McCloud, the so-called "F-22N Report" states that the air superiority fleet is the Air Force's most pressing modernization requirement. This certainly is borne out by the emphasis on the F-22 in the Air Force's program. It would seem, however, that there are other requirements that might be more pressing. For instance, why shouldn't we be more worried about filing other requirements, such as replacing the F-111 capability that will be lost next year, or perhaps modernizing the older close air support aircraft like the A-10s?

General MCCLOUD. The USAF employs a mix of assets that perform the same missions as the F-111 and the A-10. These include bombers as well as F-15Es and multirole F-16s. Air superiority, on the other hand, is the number one mission of the U.S. Air Force. Air superiority leverages every facet of Joint Combat Force Operations. It renders enemy air power impotent and puts at risk all elements of the enemies warfighting structure. The United States must dominate the air superiority battle from the outset.

EARLY RETIREMENT OF THE F-111 FIGHTER/BOMBERS

Senator LEVIN. As I understand the situation, last year the Air Force's budget request to OSD had presumed the early retirement of the F-111 fighter/bomber fleet. Apparently, the CINCs objected to this change. In response to the CINCs concerns, OSD revised the budget to restore the F-111s and keep them in the force at least through the end of the Future Years Defense Program. The fiscal year 1996 budget, however, shows that the Air Force plans to retire all of the F-111s next year. General McCloud, what has changed since last year that allows the Air Force to retire these aircraft early? What will the Air Force do to try to make up for this capability lost with the F-111 retirement?

General MCCLOUD. The decision to retire the F-111 is a budget driven decision. As the Air Force budget has continued to decline, we have had to make difficult choices. The risk of this choice is lessened because we have many more systems capable of delivering precision guided munitions than we had previously. In Desert Storm, the F-111F represented 55 percent of our precision guided munition (PGM) capable fleet, in terms of number of aircraft. Today, the F-111F is only 13 percent of our PGM capable fleet. The increase in numbers of aircraft which can deliver PGMs greatly mitigates the risk of retiring the F-111F. The CINCs supported the F-111 retirement and the Chairman recommended the F-111 be retired in his annual program assessment.

TSSAM REPLACEMENT

Senator LEVIN. General McCloud, the former Chief of Staff, General McPeak, was quoted as saying something to the effect that if TSSAM were canceled one day, he would have to start a replacement program the next. As we all know, TSSAM was canceled late last year. As I understand the fiscal year 1996 budget situation, however, no actions, beyond those already planned, were taken by any of the services to reflect the TSSAM cancellation decision. How could the Air Force submit a budget that has neither a TSSAM replacement program or additional numbers of other stand-off weapons like AGM-130 or Have Nap?

General MCCLOUD. TSSAM was canceled after the Air Force had submitted its fiscal year 1996 budget to OSD. However, the TSSAM mission need remains valid. The Air Force and Navy are aggressively pursuing an accelerated, streamlined replacement program known as the Joint Air-to-Surface Standoff Missile (JASSM). We are currently working to identify funding in the Air Force's fiscal year 1997 POM, but still require an estimated \$50 million in fiscal year 1996 RDT&E funding to meet our fiscal year 2000 target for JASSM limited operational capability (LOC).

Senator LEVIN. Given the TSSAM cancellation, does the Air Force now have a need for additional numbers of these weapons? [AGM-130, Have Nap]

General MCCLOUD. The Air Force is continuing to explore alternatives. Both AGM-130 and Have Nap provide significant weapons capabilities today. At this point, we believe procuring JASSM is the most cost effective way to meet the TSSAM operational requirements. Reallocating current resources to additional Have Nap and AGM-130s would absorb a significant portion of our limited fiscal year

1997-2001 munitions funds while leaving many of the JSSAM needs unfilled. However, the conventional ALCM (CALCM) can be launched well outside area defenses and covers some of the TSSAM target set. We are seeking to fund the CALCM program beyond the fiscal year 1995 buy of 100 directed by Congress.

If additional fiscal year 1996 munitions funding became available, the Air Force would apply it to the following programs:

- (1) JASSM RDT&E
- (2) CALCM procurement
- (3) AGM-130 procurement

F-18 PRODUCTION RATE

Senator LEVIN. Admiral Bennitt, last year the committee proposed to authorize only 17 F-18 C/D aircraft in the fiscal year 1995 budget. At that time, the Navy and DOD complained that 24 aircraft was the minimum number of aircraft needed to support modernization and forces structure objectives. This year, the Navy is requesting only 12 F-18 C/D aircraft. How is it possible that 17 F-18s was an inadequate number last year and 12 is good enough this year?

[Admiral Bennitt did not provide a response in time for printing. When received, answer will be retained in committee files.]

STREAMLINING TACTICAL AVIATION

Senator LEVIN. Admiral Bennitt, there has been much recent discussion about various initiatives that the Department of the Navy is taking to streamline its operations. These have included such actions as integrating Marine Corps tactical aviation units into carrier air wings (or the so-called "TacAir integration plan"). What steps are you taking to ensure that there is no erosion in the capability to provide close air support to Marine Corps ground forces?

[Admiral Bennitt did not provide a response in time for printing. When received, answer will be retained in committee files.]

QUESTIONS SUBMITTED BY SENATOR KAY BAILEY HUTCHISON

ATTRITION AIRCRAFT

Senator HUTCHISON. General McCloud, I am concerned about attrition replacement aircraft for the F-16 inventory. On average, how many F-16s are lost each year?

General MCCLOUD. On average, we program for losses of 15 F-16 C-models every year. This is calculated from 3.5 aircraft per 100,000 flying hours.

Senator HUTCHISON. How many attrition reserve Block 50 F-16s remain in the inventory?

General MCCLOUD. In the current 96 PB program, as of fiscal year 96/4, there will be three Block 50 attrition reserve aircraft. Even with deliveries continuing through fiscal year 1997, Block 50 attrition reserve is forecast to run out in fiscal year 2000. Block 52 attrition reserve is programmed to be seven in fiscal year 96/4, and is projected to be five in fiscal year 2000.

Senator HUTCHISON. What complications arise if and when you are forced to mix differing models of the same aircraft within a wing or squadron?

General MCCLOUD. Mixing different models, or blocks, in the same wing or squadron complicates maintenance, operations and training. Maintenance would require increased spares and parts, more specialized personnel, and different support equipment. Operations and training is affected because different capabilities require specialized training. For example, Block 40 LANTIRN units require precision munitions training and would operate mostly in the night mission. HTS Block 50 units train to employ HARM anti-radiation missiles, and operate around the clock.

Senator HUTCHISON. How many F-16s per year do you need to cover attrition?

General MCCLOUD. Without procurement, the attrition reserve shortfall will drive a reduction of combat aircraft. With the Next Generation Attack Fighter (NGAF) replacing the F-16 starting in fiscal year 2010, F-16 attrition reserve should be programmed to reach zero by fiscal year 2009. Assuming 15 F-16Cs attrit per year in the 8 years from fiscal year 2001 to fiscal year 2009, 120 F-16s will need to be replaced. Procuring F-16s early in the FYDP will build a healthy attrition reserve which will attrit to zero as NGAF arrives.

F-16 ATTRITION AIRCRAFT

Senator HUTCHISON. How much would prospective F-16 attrition replacement aircraft cost and what amount would be needed for long lead items for the next fiscal year?

General McCLOUD. The USAF would want to buy 12 F-16s per year in the FYDP to partially offset an estimated fiscal year 2010 shortfall of 120 attrition F-16s. At this buy rate, F-16s could be procured at an average unit cost of about \$25.6 million. Beginning production in fiscal year 1997 would require \$33.3 million in long lead costs in fiscal year 1996. We currently have fiscal year 1994 production line close-out funds of \$49.8 million that could be applied to the long lead costs with congressional approval. Six F-16s per year could be procured at an average unit cost of about 28.1 million. Long lead costs for this option would be about \$16.3 million in fiscal year 1996. Additionally, support equipment will be required for new F-16s. Costs for this equipment will depend on the buy rate and aircraft beddown plans.

Senator HUTCHISON. General Blot, under current budget constraints, how long will it take to reach the procurement objective for V-22?

General BLOT. Under the current \$1 billion (fiscal year 1994 dollars) procurement funding cap, the procurement objective of 425 Marine Corps aircraft will be reached in fiscal year 2023 after 27 years of production. Low Rate Initial Production (LRIP) will begin with Long Lead funding in fiscal year 1996 and procurement funding in fiscal year 1997. Initial Operating Capability (IOC) will be achieved in fiscal year 2001. Full Operating Capability (FOC) will be reached in fiscal year 2018.

Senator HUTCHISON. General Blot, what would be the optimum procurement rate, and how much would it save?

General BLOT. The optimum procurement rate for the Marine Corps alone would be 36 MV-22 aircraft per year which achieves the procurement objective of 425 Marine Corps aircraft by fiscal year 2013 and modernizes our total force 10 years earlier than the current plan with a savings of \$4.92 billion (this year dollars).

Senator HUTCHISON. General Blot, what is the anticipated unit cost for the V-22 and would you describe any cost containment initiatives?

General BLOT. The current Naval Air Systems Command (NAVAIRSYSCOM) estimated average unit recurring flyaway cost for the Marine Corps MV-22 is \$38.7 million (fiscal year 1994 dollars). This figure is the result of numerous cost containment initiatives during Engineering and Manufacturing Development (EMD). The initial EMD efforts focused on a comprehensive set of trade studies designed to enhance the affordability of the V922 weapon system by improving producibility and reliability, lowering weight, implementing material and technology improvements, and trading off performance in excess of requirements for cost savings in selected areas.

Other cost containment initiatives implemented to date include the use of Integrated Product Teams (IPTs), an Integrated Test Team (ITT), a Cost-Plus-Award Fee contract with awards for meeting program goals and reducing cost, and continued risk reduction flight testing using the Full Scale Development (FSD) aircraft.

Future cost containment efforts will include Lean Production initiatives designed to reduce cycle time and increase manufacturing process efficiencies, a cost-type contract in Low Rate Initial Production (LRIP) with incentives for lowering cost, and configuration stability during the LRIP manufacturing cycles. A multi-year contract for LRIP, if approved, would further reduce production cost by incentivizing the contractor to make additional process improvement investments and providing higher supplier base stability through a longer term commitment.

The EMD phase was structured to include an aggressive Design-To-Cost (DTC) program which continues to focus on lowering the recurring unit cost of the V-22 through initiatives at both the prime contractor and sub-contractor levels.

[Whereupon, at 4:16 p.m., the hearing was adjourned.]

DEPARTMENT OF DEFENSE AUTHORIZATION FOR APPROPRIATIONS FOR FISCAL YEAR 1996 AND THE FUTURE YEARS DEFENSE PROGRAM

WEDNESDAY, MAY 10, 1995

U.S. SENATE,
SUBCOMMITTEE ON AIRLAND FORCES,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

TACTICAL INTELLIGENCE AND RELATED ACTIVITIES IN THE ARMY AND AIR FORCE

The subcommittee met, pursuant to notice, at 2:58 p.m. in room SR-232A, Russell Senate Office Building, Senator William S. Cohen, presiding.

Committee members present: Senators Cohen and Levin.

Professional staff members present: Romie L. Brownlee, Stephen L. Madey, Jr., and Eric H. Thoemmes.

Minority staff members present: John W. Douglass and Creighton Greene, professional staff members.

Staff assistant present: Shelley G. Lauffer.

Committee members' assistants present: Richard W. Fieldhouse and David A. Lewis, assistants to Senator Levin; Suzanne M. McKenna and John P. Stevens, assistants to Senator Glenn; Lisa W. Tuite, assistant to Senator Byrd; and William Owens, assistant to Senator Robb.

OPENING STATEMENT OF SENATOR WILLIAM S. COHEN, PRESIDING

Senator COHEN. The subcommittee will come to order. Gentlemen, as you may or may not know, Senator Warner is currently in the hospital recovering from the flu and hopefully is well on his way to recovery, and I am standing in for him during this particular hearing.

I will begin with an opening statement. Senator Levin will make whatever comments he would care to make, and we will receive a briefing from each of you in a combined effort and then we will open to questions. Any classified matters that come up should not be discussed here. If you have any we will go into the adjoining room, which I am told has been swept.

This afternoon, the Subcommittee on AirLand Forces meets to consider the tactical intelligence and related activities, the so-called TIARA budget for the Army and the Air Force. We have asked the

services to present their views on TIARA from the perspectives of the warfighters, the operators in the battlefield and battle airspace.

We specifically did not want this hearing to become a forum for discussing the technical parameters and specifications of the tactical intelligence systems. If we can get through this entire hearing without a discussion of the range of the gigahertz in which a particular system operates, then maybe we will be successful.

Senator Levin understands gigahertz. I am still at the megahertz level myself.

We do want to hear and gain a better understanding of the role these systems play on the battlefield and the contributions they make to successful prosecution of the battle. We want to understand how these systems operate through the different echelons of the battlefield and discuss which systems are essential, which are unnecessary and redundant, how all the sensor and collections systems analysis and fusion systems and dissemination systems and processes are linked to provide the commanders with the information they need to win on the battlefield.

We are also interested in how the military services are linked to the national systems in order to bring that information to the battlefield, to the battle airspace, in ways that are timely and useful to commanders. We want to hear also that you are adequately funded, and where you believe we should apply additional resources.

We will first hear from General Anderson from the Army, followed by General Campbell of the Air Force, and I understand that when you have both completed your individual presentations, you will jointly demonstrate how the Army and Air Force TIARA interoperate on the battlefield. We will then allow Members to ask questions, and, if needed, following that time of questions we will close the hearing and proceed to room 222, as I indicated earlier, where there will be at least an opportunity for the services to answer any classified issues that might arise during the course of your responses to questions coming from the Members.

Gentlemen, we look forward to your presentations. Senator Levin.

Senator LEVIN. Thank you, Mr. Chairman. Senator Warner, of course, we know will be back on his feet in a matter of hours or days. He is on the way out of that place, thank God, and we owe him a debt of gratitude for organizing this afternoon's hearing and for bringing up to the front burner a subject of great importance to us.

The Army has been making great progress in improving situational awareness on the battlefield through its digitization initiative, and we have an opportunity to extend this concept further. I know that Admiral Owens is talking about a revolution in military affairs, including such concepts as dominant battlefield awareness.

Whether one subscribes exactly to Admiral Owens' vision or not, it is clear that we are going to have to be able to fight smarter on future battlefields, given our reduced force structure and our desire to minimize casualties. The Army and the Air Force systems that we are going to discuss this afternoon are the foundation upon which any such concept will be based.

After Desert Storm, General Schwarzkopf listed intelligence as one of the shortcomings of our forces. This hearing is going to provide us an opportunity to review some of the current programs and engage what we have been able to learn from and adapt to following the Gulf war. So, again we thank you, Mr. Chairman, for as usual carrying on, or in this case filling in for Senator Warner. I look forward to the hearing.

Senator COHEN. Thank you, Senator Levin. I might point out I just left an Intelligence Committee hearing that is ongoing as I speak, and General Leader was there, and I believe he served under General Schwarzkopf in the Persian Gulf and I know he had a contribution to make in terms of talking about what contributions TIARA does make on the battlefield.

So we look forward to your presentations. General Anderson, are you going to go first?

**STATEMENT OF MAJ. GEN. EDWARD G. ANDERSON, III, USA,
ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS AND
PLANS, FORCE DEVELOPMENT**

General ANDERSON. Thank you very much. If I may, I would like to use the screen.

My name is Maj. Gen. Edward Anderson. I would like to thank you for the invitation and the opportunity to come and brief you. I would like to begin by saying we are sorry to hear about Senator Warner. We wish him a speedy recovery.

ARMY INTELLIGENCE

Meeting the Warfighter's Requirements

I am the Assistant Deputy Chief of Staff for Operations and Force Development on the Army staff, and I would like to talk to you about meeting the warfighters' requirements.

Next slide, please.



Agenda

- Commander's IEW Requirements
 - Supporting Architectures
 - Precision Strikes

Includes More Than Just Army TIARA:

- Army non-TIARA Intelligence
- DARP and Air Force Programs

Must consider the complete Architecture

Army
DCSOPS-FD

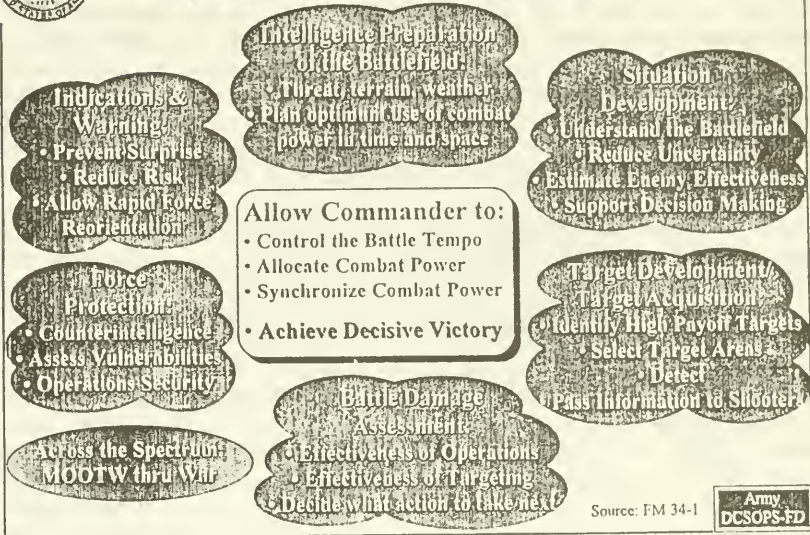
This is the agenda that I will follow. First of all, I will begin by discussing the commanders' intelligence electronic warfare requirements and then how those requirements shape the architecture, and then I am going to lay out the supporting architectures for you.

Let me begin with one caveat, if I may, and I will tell you that this briefing will include discussions of briefings that extend beyond what we normally refer to as TIARA, and then we will have some of the Army non-TIARA systems in there such as the advanced Quickfix. We will have some DARP systems, Army DARO systems in there, such as UAVs, and, of course, some of the Air Force systems, but they are all a part of the architecture for the tactical commander.

Next slide, please.



Commander's Intelligence Tasks



Sir, when we talk about intelligence and intelligence requirements for the commander, basically we break those into six tasks. Our experience has shown that these six tasks are necessary to allow the commander to do those things that he needs to be able to do to achieve a decisive victory on the battlefield. Those things being controlling the battle tempo, the tempo of the battle, both his and the enemy's tempo, allocating combat power as well as synchronizing combat power on the battlefield. Doing those things, he will be able to achieve decisive victory.

The first task is what we refer to as I&W, indications and warning, and that is simply a task that allows the commander and his force to be not surprised on the battlefield.

Next is intelligence preparation of the battlefield. Those are the activities that go on prior to the battle to be able to identify what would be the enemy's expected course of action, what would be his strengths, what would be his weaknesses, his vulnerabilities, his centers of gravity, so that the commander can develop his operational plan and concept of the plan.

Then we have situation development. Situation development is primarily the task that is conducted during the assessment or during the execution of the battle. As a consequence this allows him to determine whether the assumptions that he used to develop his plan were correct, whether the enemy is doing pretty much what he had been predicted to do during the intelligence preparation on the battlefield, and if not, what adjustments must he make to his own plan.

A part of that, of course, and a part of intelligence preparation of a battlefield, is the identification of high payoff targets—those key targets that must be found and destroyed if his plan is going

to be able to succeed—so it is the development of the targets as well as the focusing of sensors on those targets and the acquiring of those targets.

Once the targets have been engaged—that is not necessarily an intelligence task—then it is important to be able to go back and assess the damage. Did we achieve the effects that we wanted to achieve on those targets? Now, that is targets both engaged by fire or by operations so that we can determine, the commander can determine if he needs to reallocate combat power or reengage those targets that he was not able to fulfill perhaps through his criterion as a part of the plan.

And last, but certainly not least, an intelligence task is to provide force protection. In other words, it enables us to determine the intel, or to counter the intel capabilities of the enemy. We are fighting an enemy, a thinking enemy, and he is trying to do the same thing to us as we are to him, and so it is important that we have the ability to counter whatever his intelligence threats are.

All of these tasks happen across the spectrum of war, from war to military operations other than war. It may be that instead of talking about an enemy, we are talking about other pieces, but nonetheless it is the same situation, and it happens for commanders from corps down to platoons. They all fundamentally have these same intelligence tasks that provide them the information they need to conduct battle.

Next slide, please.

Senator COHEN. Could I ask you one question on that chart?

As you go over to target development and the enemy acts in a way different than your intelligence predicted it would, I assume there are war-gaming contingencies built in now. Is that part of the intelligence task? How does that operate?

General ANDERSON. Sir, the intelligence task is to give you an idea of possible courses of action and probable courses of action. If for some reason one of the courses of action—

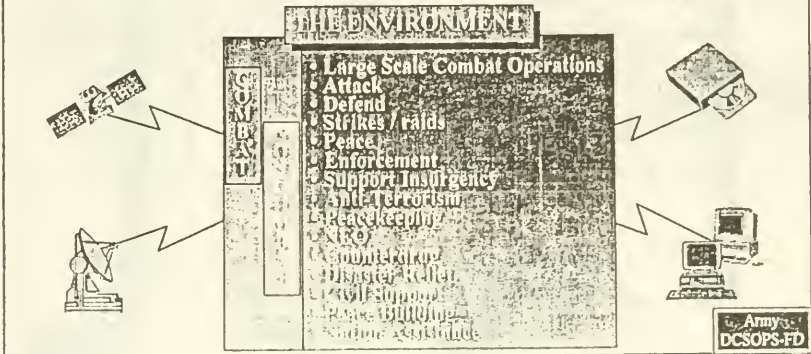
Senator COHEN. Michael Jordan is not going to come out mad tonight. He is going to come out and play laid back, right? So it is unanticipated. We expected him to come out big. That does not happen. You have a contingency plan lined up, right?

General ANDERSON. Exactly, sir. We call them branches and sequels, and we do the contingency planning, and associated with that is an intelligence analysis of each one of those as well.

Senator COHEN. Okay.

THE NEED FOR BATTLEFIELD INFORMATION IS NOT NEW

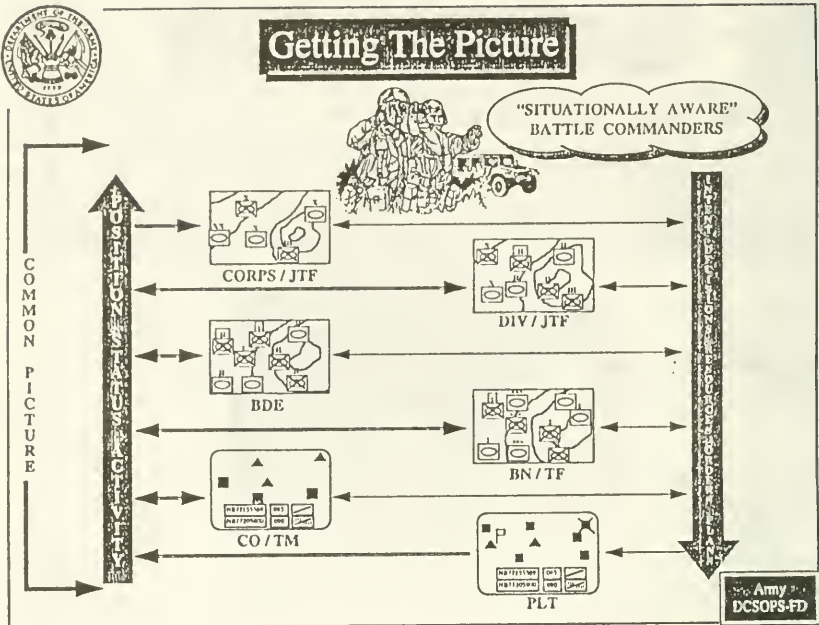
- But needs have grown considerably--synchronizing multiple systems, increased battlespace, joint/coalition/non-government players
- and the means of providing battle command information is revolutionary



General ANDERSON. Sir, if I may, what we are talking about in the intel tasks is basically getting information to the commander so that he can make the decisions that he needs. Information is the key to decisionmaking, but the need for information is not new. It was the same in the Civil War, the Revolutionary War, the Korean war, and World War II, whatever the case may be, but what is new is that needs have grown a little bit because of the fact that the battleground has become much more complicated and complex, and certainly there is an increased battle space, and there are different players.

What has also become very new is this revolutionary change that we are seeing in technology, the Information Age technology that allows you to gather and pass the information, and that is what we are trying to capitalize upon when we talk about digitization of the battlefield.

Next slide, please.



Part of the technology, as I indicate, is digitizing the battlefield, and one of the purposes for that is to put every commander from platoon up to corps, give him a common picture of the battlefield.

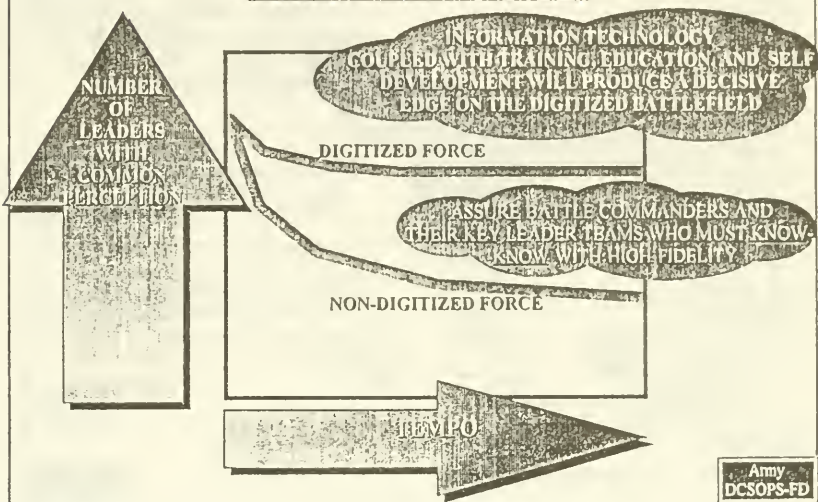
It is not the same picture of the battlefield. The corps commander does not have to see the same thing a platoon commander does, but what we want is the common picture so that what the corps commander is looking at is basically derived from the information that comes down from the platoon level, or the company level on up, and then what you are able to do with this common picture is, you are able to pass position information, status information such as ammunition and fuel, horizontally across all of these echelons, but you still have to retain some hierarchical capability because that is where you pass your orders as you develop the plan and make your decisions, and they go hierarchically, so there is a common picture, and digitization gives us the capability to do it horizontally over all the echelons.

Senator COHEN. Are there time lines associated with both those vertical and horizontal?

General ANDERSON. There are, yes, sir, although in the horizontal, what we are trying to do is basically make it real time or near real time. Part of our problem, as you well know, sir, is that it takes so long to get the information down to the lowest level. This we want to do instantaneously.



Digitization- A Decisive Edge in Information



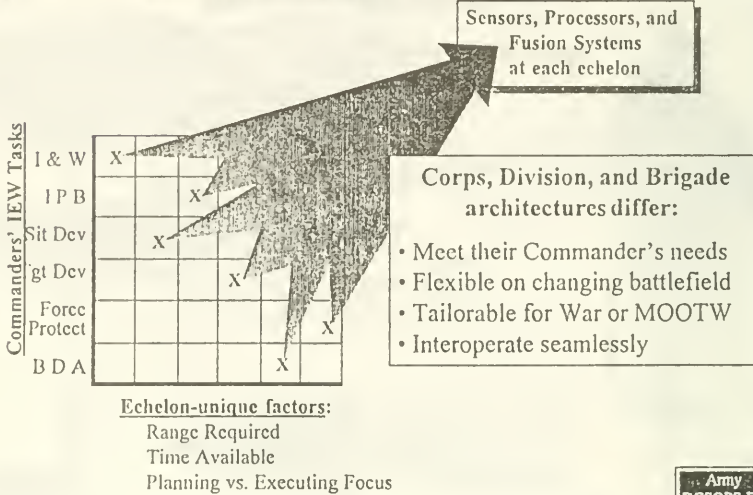
Sir, if I can extend the argument on digitization a little bit further, what you see here is, if you look historically at the number of leaders who have the common picture of the battlefield, if you will, and we look across the bottom at the tempo of battle, what we generally have found in a nondigitized force is a profile similar to this in terms of getting the information to the commanders.

In other words, at the start of the battle, everybody's generally got pretty good information, pretty good intel, but then as the tempo of the battle picks up and as we go farther into the battle, what happens is that that gets degraded and some levels of command do not get the information that they need. That goes back to the hierarchical flow of information.

With digitization, we believe that we will be able to get all the information, the right information to the key leaders at the right time.



Architecture Considerations



Sir, I have talked about the information flow and the intelligence tasks somewhat. What I would like to do now is show you that the six intelligence tasks that I discussed at the beginning, if you marry those against the unique requirements that are associated with each of the levels of command, and I will describe those in greater detail shortly, from that then you will determine what systems are necessary and you will get an architecture.

Now, as I say, the requirements at the various levels of corps, division, and brigade in fact are different. The commander's needs, he has to have the ability to control those resources, those sensors or whatever they may be, that satisfy his unique requirements, and he also then has to have the access to other systems that have common information for all commanders. He has to be able to have systems that are flexible enough to change to whatever the battlefield develops.

Unfortunately, the blinding glimpse of the obvious, you cannot orchestrate what is going to happen on the battlefield. He has to be able to have a system that he can use both in war as well as in military operations other than war, and he has to again have access to the information that comes from sensors that he does not control, and you do that through interoperability in a seamless architecture.

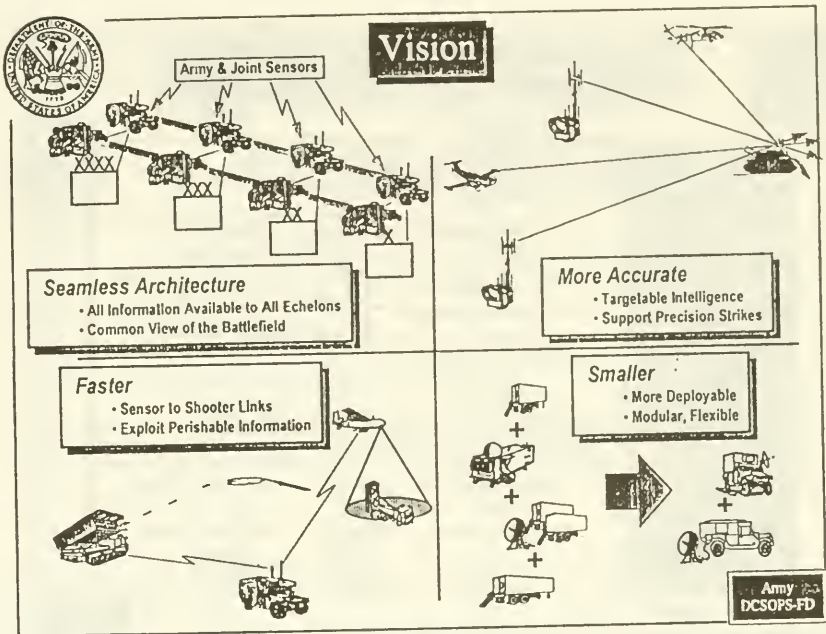
Senator LEVIN. What is the battle line, the horizontal there?

General ANDERSON. These are intended to be unique requirements for each of the elements, sir.

Senator LEVIN. But what is the first column?

General ANDERSON. This is just hypothetical, sir, if you will. It is just illustrative. It is not informative.

Senator LEVIN. Okay.



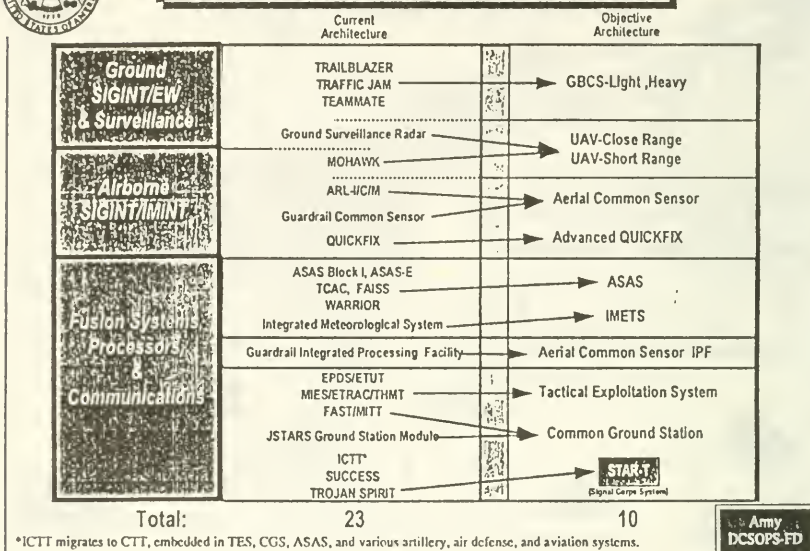
General ANDERSON. I mentioned a seamless architecture. There are four elements to a division that we have for the development of the intel systems for the commander, our tactical systems. First, as I mentioned, it is a seamless architecture that gives you the capability to get information at all echelons.

We also want our systems to be more accurate so that they can provide targeting information, or so that the information that they do provide is targetable. Then, we want to make sure that we are able to get that information that they provide from the sensor to the shooter faster so that they can shoot those targets quickly. In some cases the targets, of course, are perishable, or mobile. They move very rapidly, another reason why it must get to them faster.

And then we need to make sure that our systems, because we are now a force projection Army, are smaller, so that they are both deployable and mobile enough to be able to keep up with the force and the commander they may have to support in these large battle spaces.



Intelligence System Convergence



So, sir, if you take that vision and apply it to our systems, then this is how we see the convergence of our existing systems to where we want to be as the objective.

Now, we categorize our systems, as I have shown here, into ground signal intelligence and electronic warfare and surveillance, airborne, signal intelligence and imagery intelligence, and then the fusion systems, the processors, and communications systems.

This is what we currently have. We currently have a total of 23 systems. Our objective is to go to 10 systems, and the way we do that is to achieve those characteristics that I have just described for you in the vision, ASAS and the common ground station are key to this seamless architecture that we see as absolutely necessary.

Right now, we use Trojan Spirit, and ultimately we will migrate to a signal system called Star-T as the mechanism for passing the information in that seamless architecture.

As you look also at the sensors that we have in terms of UAVs and common sensors, the advanced Quickfix and so on, you will see that what we are doing is extending the ranges but we are also getting the accuracy that is necessary so that they can be able to view the data that they produce and use it for targeting information.

For targeting systems faster we will use, again use the capability through Star-T, but again the ASAS and common ground station will give us the capability to pass the information quickly, and all of these systems are basically lighter so that they can be deployed.

An example here is the ETRAC or the TENCAP system, tactical exploitation of national capabilities. Currently these exist in a series of six very large vans and associated vehicles, and what we are doing is, we are reducing that to a system called the tactical exploi-

tation system, which will be a series of small HMMWVs, much smaller in number, that gives us that deployability.

Senator COHEN. Will the acronyms be smaller, too? [Laughter.]



Fulfilling Requirements

System	I&W	IPB	Situation Dev	Tgt Dev/ Tgt Acq	Force Protect	BDA
UAV- Close Range			X	X	X	X
UAV- Short Range	X		X	X	X	X
Guardrail Common Sensor	X		X	X	X	X
Airborne Recce-Low	X		X	X	X	X
Ground Based Common Sensor	X		X	X	X	X
Advanced Quickfix	X		X	X	X	X
JSTARS GSM	X		X	X	X	X
ASAS	X	X	X	X	X	X
Integrated Meteor- ological System		X				
Trojan Spirit	X		X			
TENCAP	X	X	X	X	X	X

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General ANDERSON. I apologize for that, sir. I am sorry. Let me do a quick acronym check, sir.

Senator COHEN. I just saw six lines compress into a TES, so it made more sense to me that way.

General ANDERSON. That is one of our objectives, sir.

Sir, if you do a roll-up, then, of all of these systems, these key systems, if you will, along with the six intelligence tasks, you can see here that in the case of intelligence indications and warning, what we have are these systems that give us the capability to not be surprised. In other words, give us the advanced notice, and those are primarily longer range systems.

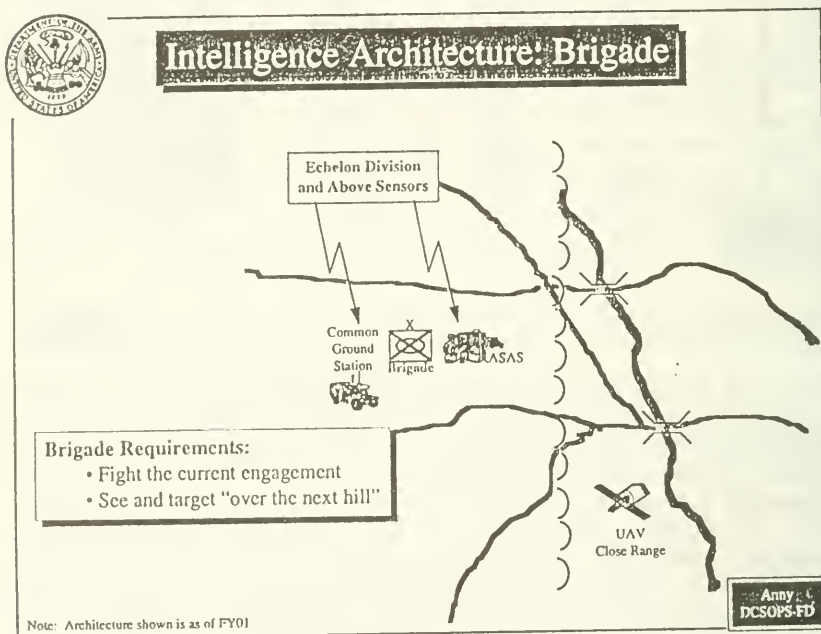
In terms of intelligence preparation of a battlefield, the ASAS, our fusing and processing system that does our correlation for us along with our integrated meteorological system, the system that gives us the weather in the target area, and our TENCAP, tactical exploitation of national capability system gives us the digital or the terrain information that gives us the necessary information for intelligence preparation of the battlefield, and then all of our sensors give us the capability to do situational development, target development, and target acquisition assessment of our damage and protection of the force.

Now, what I would like to do, sir, is to move into an architecture and lay these out on the ground for you if I may as part of our various echelons. I will start with brigade. That is where the rubber meets the road, really. As you know, there are three maneuver bri-

gades within a division, and then the aviation brigade and the discom and so on.

I am going to talk here about our maneuver brigades. This is where the close fight is fought. His interest is that he has got to fight the current engagement, and so as a consequence he does not have to see quite as far, but he needs things in real time, so the system, the intelligence systems that he has available to him will be the UAV that gives him that capability to look over the hill, but then we will be linked into the common ground station, and all source analysis system, the ASAS.

These systems here give him the capability to access information from higher levels, such as division or corps or even national systems, if that is what the situation requires.

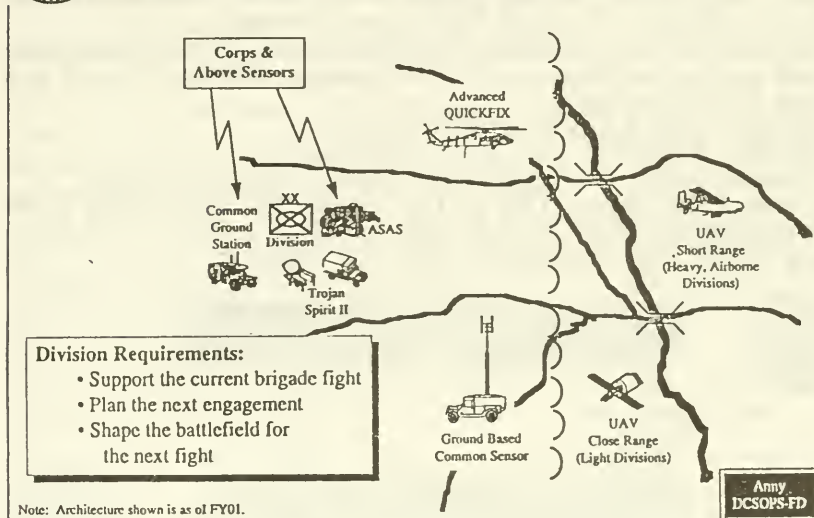


This is what a common ground station would look like. Now, what we have got is a HMMWV-mounted system right now. We are on the back of a 5-ton and, as I say, our intent is to reduce the size, and that is the common ground station.

This is what a screen would look like from a common ground station. He has the capability to give simultaneously both image as well as targeting data. What you see here, these little yellow dots represent targets, and he has the capability to categorize those things as track vehicles, or moving vehicles. This is a refined or advanced version of the common ground station module, which was adopted from JSTARS, which was used in the Desert Storm war.



Intelligence Architecture: Division



Sir, if I may now move to the division, the division commander's area and his requirements are slightly different. He has to support that brigade commander or those brigade commanders as they are doing their battle, and he does so by allocating fires and allocating resources to them so that they can fight the battle based upon the intelligence preparation of the battlefield that was conducted earlier, but he also does the deep battle for them, deep in relative relation to what the brigade commander has so that the brigade commander can focus on that current or that near-term or that direct fire battle right in front of him.

So he, the division commander, then will have to have the capability to move forward and to engage further. He also needs to have the capability to plan the next engagement, so he will be looking at the systems out there in greater range to try to determine what are the enemy's intentions and what are his capabilities, and so he, as I say, will be shaping the battlefield for the next fight, so the systems he has will be the UAV short range in the heavy divisions and in the airborne division or the close range in the light divisions.

He will also have the advanced Quickfix and the ground-based common sensor which will give him the capability to do the signal intelligence, the COMINT, the communications intelligence, electronics intelligence, direction-finding and jamming. That is a capability that the direction-finder does not have that the division commander will have.

The division commander will also have the common ground station and the ASAS, and with the Trojan Spirit he will have the capability to go also to corps and above to get the information for the additional sensors.

This is the short-range UAV, the unmanned area vehicle short-range. This is the system that the division commander would have.

This is the advanced Quickfix. This is the SIGINT bird airborne, signal intelligence looking at communications intelligence, electronic intelligence, direction-finding and jamming.

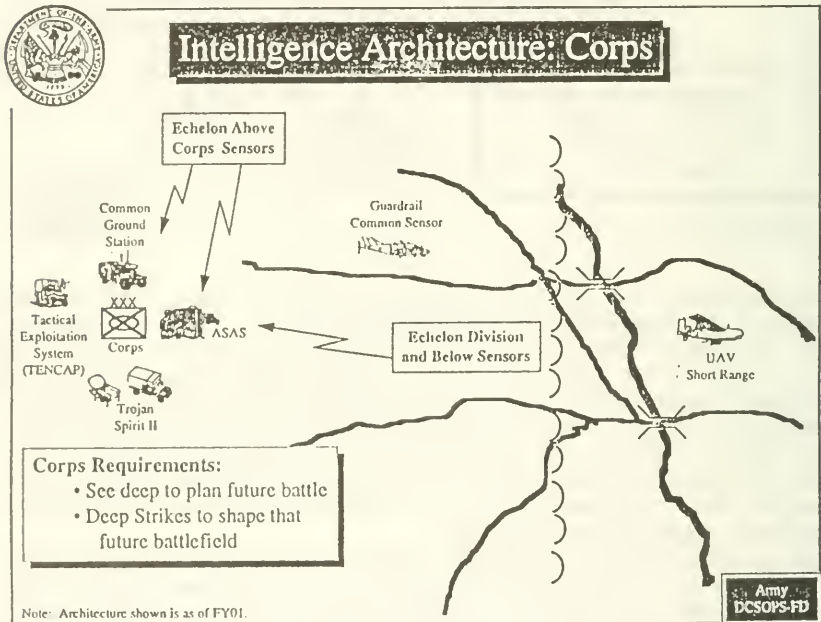
And this is the ground-based common sensor. This is the ground-based system that does many of the same capabilities that you saw in the airborne system.

Senator COHEN. Is that a retractable—

General ANDERSON. Yes, sir. It comes down.

Senator COHEN. You might have trouble moving otherwise.

General ANDERSON. This is the Trojan Spirit, sir. This is the communications link. It gives the capability to have communications with higher headquarters and other systems.



Sir, I would now like to move to the corps. Basically, his responsibility is to monitor the current battle that is being fought by the division commander and the brigade commander to make sure that his objectives are being fulfilled, but at the same time to be looking farther out in terms of time and space at the next battle, or series of battles.

Senator COHEN. Where would he be located in terms of the battlefield?

General ANDERSON. Sir, the corps commander, if you were to consider this to be the forward edge of the battlefield, in the execution of the battle will probably be forward in the division area.

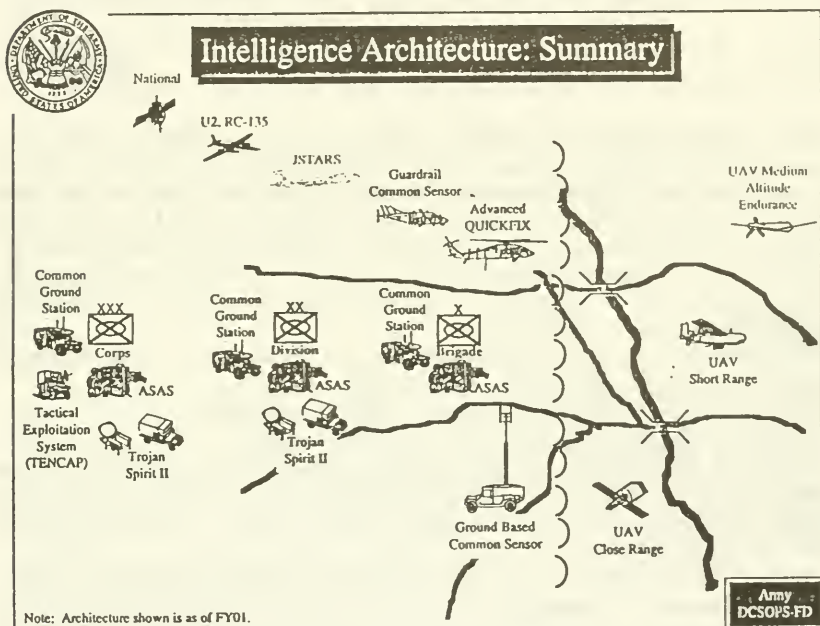
Now, it is a very important question, because we are trying to give that corps commander—part of the problem is, he does not have the capability to get all of this intelligence information, except in his command post, so consequently too often he gets stuck in his

command post, and what we are trying to do through these mobile systems and everything is give him the capability to move forward so that he can command during the battle. That is a very important point.

The corps commander, if you look at him in comparison to the division commander, sir, he still has the UAV, but what he does not have now is he does not have the advanced Quickfix or the ground-based common sensor. What he does have is the Guardrail common sensor. This is his system. This is his SIGINT capability, his signal intelligence capability, which he can use at the longer ranges, which he needs to fulfill his unique requirements.

He also has the ASAS, and he has the common ground station, and he has the Trojan Spirit data link, but then he also has this tactical exploitation system that gives him the capability to touch into national systems. Then he can take this information and process it and pass it to the divisions and brigades over the ASAS and common ground stations.

Sir, this is what a Guardrail common sensor looks like. It is in essence a C-12 aircraft with an awful lot of electronic gear in it.

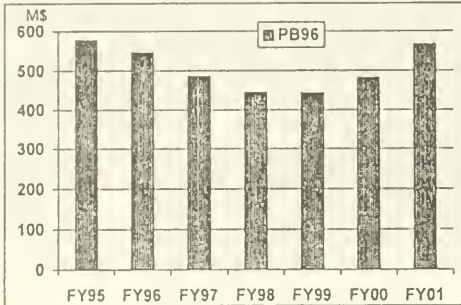


Sir, in summary, for the architecture, if you laid all those things out on the battlefield, then this is what you see. Brigade, the division, and the corps, each one of them tailored so that it enables that commander to be able to fulfill his warfighting requirements unique to wherever his particular level is at that particular time.



Army Intelligence RDA Funding

VISION: - Migrate from 23 existing sensors, processors, and intel-specific commo systems to 10 interoperating systems that are more capable, tailorable, deployable, modular, and emphasize open architecture and commonality.
- Field all objective systems to FP1 by FY07, to all AC by FY12.



DOES:

- Field Interim ASAS and CGS capabilities, develop and begin preplanned upgrades
- Complete GRCS fielding; add critical commonality and Joint Interoperability
- Complete and standardize six ARL-M
- Develop / start fielding TES, CTT, GBCS, AQF
- Bridge fielding gaps with mods
- Rely on FY02-FY12 to:
 - Complete CGS, CTT, TES, GBCS, AQF fielding
 - Reach objective ASAS and CGS capabilities
 - Develop and build Aerial Common Sensor

DOES NOT:

- Buy optimum requirement of ASAS-E, Trojan Spirit, GBCS, AQF, ARL, and IMETS
- Build complete GRCS commonality and interoperability

Note. Funding includes some non-TIARA programs.

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You asked, sir, in your letter to talk about the budget piece, and I would like to go into that. This represents the budget summary for our systems. Again, one caveat, sir, is that included in here are some of the non-TIARA systems such as advanced Quickfix, but what you see here, and I have already talked to you about the vision of going from 23 down to 10 systems in a seamless architecture to have the capability to interoperate, in 1995 we had just slightly less than \$600 million.

Senator COHEN. I was just inquiring as to whether these were all white programs included in this budget.

General ANDERSON. We do have a black program.

Senator COHEN. We will talk about that later.

General ANDERSON. A little bit less than \$600 million, sir, in 1995, down to a little less than \$550 million in 1996 was our request, and you can see what the trend is, and it starts back up here in the out-years.

What we are able to do then with that funding profile is what I have shown you here. We are able to fund the interim all-source analysis system, the ASAS, and the common ground station that I showed you that are so important in each of these echelons. We are able to complete the Guardrail common sensor fielding and to add some commonality and joint interoperability requirements to it.

We are able to complete and standardize our six airborne reconnaissance low aircraft for the multifunctional capabilities and to develop and start fielding our systems for tactical exploitation sensor, commander's tactical terminal, ground-based common system, advanced Quickfix, and for those systems where we are not able to get things that quickly we do have the capability to mod some of

the existing systems so that we can bridge the gap that comes as a result of the extended fielding.

Then as we go beyond, from 2002 to 2012, beyond the POM period, we will be able to complete the fielding of these systems and reach our objective ASAS and common ground station configuration and develop and build what we call the aerial common sensor.

Senator COHEN. Is that dip starting in 1996 and picking back up again in the year 2000 resource-driven, or is that a question of just the maturity of the programs?

General ANDERSON. That is resource-driven, sir.



Conclusion

- Intelligence "System of Systems"
 - meets tactical Warfighters' needs
 - tailored to each echelon's requirements
 - support key decisions on allocation and employment of combat power
- Intelligence support to Precision Strikes
 - Integration of Sensors, Processing/Fusion, Communications, and Weapons Systems



Sir, in conclusion, if I may, as I say, what I have tried to show you is for our intelligence systems we have a system of systems that is driven by what is necessary to meet the tactical warfighter's requirements, that is tailored so that each commander at each echelon, his requirements are satisfied so that he can make those key decisions on the allocation of combat power and synchronization of combat power so that he can ultimately be a decisive leader.

Sir, I would like to turn it over now.

[The statement of General Anderson follows:]

PREPARED STATEMENT BY MAJ. GEN. EDWARD G. ANDERSON, III, ASSISTANT DEPUTY CHIEF OF STAFF FOR OPERATIONS AND PLANS, FORCE DEVELOPMENT

Tactical Intelligence and Related Activities is an amalgamation of intelligence collectors, processors, and dissemination tools which are integrated into the Army's warfighting structure. The focus of today's testimony is TIARA, but it must be understood from the outset that the real focus is on the warfighter, and it is the warfighter's information needs that drive TIARA requirements and associated funding.

Commanders' information needs have not radically changed since armed conflict began. Knowledge of the enemy: strengths, weaknesses, composition, disposition,

and intentions; the weather: effects of weather on friendly and enemy capabilities; and the terrain: maneuverability, cover, concealment, lines of communication, and key or decisive terrain. The commander armed with this knowledge has the ability to wisely locate combat power, synchronize it, and ultimately control the tempo of the battle. What has changed over the years are the methods of providing commanders with information to allow him to control the battle. Army TIARA strives to provide commanders' with timely and relevant information to allow him to control the tempo, dominate the land battle, and achieve decisive victory.

The Army has developed an architecture to coherently integrate commander's intelligence requirements with other warfighting tools. The intelligence and electronic warfare vision calls for a faster, smaller, and more accurate intelligence system which is seamless between echelons and fully participatory in the joint task force arena. The Army is moving from 23 ground based systems to 10, saving personnel and operations costs but still maintaining essential capabilities to answer commanders' information needs.

Army doctrine calls for the simultaneous application of combat power across the width and depth of the battlespace. This entails echelonment of forces and with each echelon comes definitive commander driven intelligence requirements. At the brigade level, the commander is conducting the "now" fight and needs current information on what the enemy is doing and where he is doing it. This primarily entails precise situational awareness and target acquisition provided by unmanned air vehicles and fused information from the all source analysis system.

At the division level, commander's intelligence requirements become more complex and time dependent. Division commanders make resource allocation decisions and help shape the battlefield through deep fire and maneuver. Divisions monitor the current battle while planning the next fight by utilizing the predictive capabilities of fused all source intelligence provided by the ASAS and collection from unmanned air vehicles, ground and airborne signals intelligence platforms. Trojan Spirit communications terminals accept intelligence feeds from corps, theater, and national collectors.

At the corps level, the commander's intelligence requirements are similar to those of the division commander, but at greater depths with longer timelines. The intelligence collection and processing systems are optimized to detect and see at greater depths. It is at the corps level where ground terminals first receive information derived from theater and national sensors.

Intelligence support to precision strike is an illustrative example of warfighter support. Precision strike, the ability to quickly strike high payoff and high value fleeting targets, is a formidable capability and one which warfighting commanders consider a high priority. The need for precision strike is evident in that we had to be faster in targeting given the increased mobility on the battlefield and the lethality of modern weapons. We knew if we could strike precisely, there would be ammunition expenditure and movement savings. Finally, precision strike removes some uncertainty from the battlefield given first time kill probabilities.

The decide-detect-deliver targeting doctrine calls for deciding what targets the commander wants destroyed, detecting those targets, and finally putting steel on the target. The intelligence and electronic warfare force fully participates in two of the three targeting elements. The decide function is aided by the all source fusion system which is automatically fed by precise sensor data. The detect portion is a result of precise location sensor abilities that are tasked as a result of the decide function. Finally, delivery of precise munitions is accomplished within established timelines to achieve a first time kill. Depending on the situation, the shooter and the sensor can be linked together significantly compressing the delivery timeline.

In summary, all intelligence collection, processing, and dissemination systems are outlined in the Army Modernization Plan and fully described and woven throughout the Army Integrated Battlefield Architecture. This architecture, or blueprint, provides the structure to develop and field the best capability to meet the warfighters' needs in a coherent and planned manner. Tactical Intelligence and Related Activities represent the Army's commitment to meeting the warfighters' intelligence needs in the 21st century.

STATEMENT OF BRIG. GEN. FRANK B. CAMPBELL, USAF, DIRECTOR OF FORCES, OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PLANS AND OPERATIONS

General CAMPBELL. Good afternoon. Thank you, Senator, for having us here. My name is Brig. Gen. Frank Campbell. I am Director

of Forces for the Air Force within the Operations Deputate. I would like to talk to you about our intelligence support to the warfighter.

AIR FORCE TIARA PROGRAMS

Intelligence Support to the Warfighter



Air Force TIARA Programs

- SUBSET OF OVERALL AIR FORCE INTELLIGENCE, RECONNAISSANCE, AND SURVEILLANCE PROGRAMS
- MANAGED FUNCTIONALLY WITHIN AIR STAFF
- COMPETE INDIVIDUALLY WITH OTHER AIR FORCE PROGRAMS
- PRIORITIZED BASED ON SUPPORT TO OPERATIONS

The Air Force TIARA programs, which were the purpose of our briefing here today, are only a portion of our intelligence support to the warfighter, and a considerable proportion of what was formerly in Air Force TIARA programs is now in the Defense Airborne Reconnaissance Office, and jointly under the Joint Military Intelligence Program.

Our TIARA programs are a subset of our overall intelligence effort, and they do compete with other Air Force programs, not as a lump but individually, for balance. They are managed functionally within the air staff. In my office we have prioritized them on their ability to support other operations, and that is what I would like to talk to you about today.



Air Force TIARA Assets

- Battle Management
 - Joint STARS
- Processing & Dissemination
 - Combat Intelligence System
 - Combat Air Intelligence System
 - Constant Source
 - Tactical Cryptologic Activities
- Tactical Warning / Attack Assessment
 - BMEWS
 - DSP (SBIR)
 - SPACETRACK
 - TENCAP
 - OTH-B
 - Nuclear Detection System
- Scientific & Technical Collection
 - COBRA JUDY
- Surveillance & Reconnaissance
 - Joint STARS
 - TENCAP
 - SPACETRACK
 - PACER COIN
 - Tactical Reconnaissance Program
- Manpower & Training
 - Reserve & Guard Units
 - Space Warfare Center
 - Intelligence Training

It has been a while since we talked TIARA in your subcommittee, so even though I have seen you in other committees, both of you, this is what is in Air Force TIARA programs today.

For battle management and intelligence, the Joint Stars is in Air Force TIARA. That is one of the big ticket items. Probably one of the largest of the large cost items in the Defense Support Program which does infrared detection of missile launches around the world.

It is being replaced by the space-based infrared system, another major large ticket item within Air Force TIARA. It is not just tactical assets for the theater, but also tactical assets in support of a lot of the other warning and assessment areas for NORAD and for other services and other DOD agencies, to include scientific and technical collection on launches such as Cobra Judy.

The Space Track system detects the objects that are in space orbiting the Earth.

The Air Force TENCAP office, like the Army TENCAP office, works with the other services to pair up their capabilities to bring national assets in, much as was already briefed. Some of the other systems I will not go into in great detail, but I will mention the tactical reconnaissance program, our RF-4C program that is closing down in 1995. We can talk later, if you like, about some of the alternatives that we are looking at.

Next slide.



Air Force TIARA Resources

	FY 96	FY 97
Program Totals	\$2.51B	\$2.55B
Active Officers	2407	2412
Guard/Reserve Officers	1100	1100
Active Enlisted	7986	8105
Guard/Reserve Enlisted	1481	1481
Civilian U.S. Direct Hire	1105	1112
Civilian Foreign-Direct Hire	<u>5</u>	<u>5</u>
Manpower Totals	14084	14215

I am going to compare that now with some other costs, and some of the other systems I will be talking about today. The Air Force TIARA program is \$2.5 billion in 1996 and a little over \$2.5 billion in 1997.

The manpower associated totals are there. A considerable portion of this is manpower. A lot of the intelligence analysts and intelligence collectors who are in the world are located and funded within the TIARA program.



Air Force Non-TIARA Assets

Battle Management

- Airborne Warning and Control System (AWACS)
- RIVET JOINT (RC-135)
- Airborne Battlefield Command and Control Center (ABCCC)

Processing & Dissemination

- Contingency Airborne Reconnaissance System
- Joint Services Imagery Processing System
- Korean Consolidated Intelligence Center
- Pacific Air Forces Interim National Exploitation System (PINES)

Surveillance and Reconnaissance

- U-2
- RIVET JOINT (RC-135)
- Airborne Warning and Control System (AWACS)

Tactical Warning / Attack Assessment

- Satellites
- COBRA SHOE
- Defense Cryptologic Program

Scientific & Technical Collection

- COBRA BALL
- COBRA DANE
- COMBAT SENT
- CREEK CHART
- WC-135

The non-TIARA assets that I want to talk about—a lot of them are in the DARO—are the RC-135s that we have, the U-2s, the SR-71s that we have added in for 1995 only. A lot of the battle management assets, airborne warning and control system, the AWACS E-3A that we use around the world and the ABCCC, are also key to our intelligence architecture and how we operate in the theater. I will be talking about that as we go through the charts on that.

Senator COHEN. No SR-71s?

General CAMPBELL. In 1995 only, sir. It is in the Defense Airborne Reconnaissance Office for that. We will not be covering that in the briefing here today. I can talk in any degree of detail that you want to on that program though, sir.

The Contingency Airborne Reconnaissance System, also in the DARO, supports the U-2 downlinks. Part of what we wanted to talk about today is how we connect the sensors to the various warfighters, all the way down to the shooters. This is one of the keys of processing the information as it comes out of U-2 and redistributing that information within a system that is located in-theater, and I will show you that in a moment.

The Joint Service Imagery Processing System is a replacement for some band-aids that we put on after the Gulf war. As you know, we had a lot of trouble passing information in a timely manner down to the operational units, and this program, a new program, is going to be fielded here in the next couple of years that will go a long ways to fix the problems that we have right now. Right now, we have band-aids in place just to pass only the information. This will also do processing.

We have systems in place both in Korea and in the Pacific and over in the Gulf now that are passing imagery information but not doing processing locally. Additionally, in our non-TIARA assets we will talk about today are some satellites, all the national systems, and how we link those into our systems.



Air Force Intelligence Legacy

- Initial Focus on Tactical Operations
- Aircraft / Space Capabilities + Strategic (SAC / NORAD)
Focus = Expanded Field of View
- Our Heritage Now Means:
 - Unparalleled Aerospace Expertise
 - Broad Customer Orientation - National & Tactical
 - Global Peacetime/Wartime Capability

Air Force intelligence legacy. I want to touch on this just briefly to show how we got where we are.

Initially we focused on mostly intelligence to Air Force kinds of targeting and Air Force kinds of things, and so we grew from a system that supported ourselves to operating sensors in airborne platforms and later space platforms. Because of the reach of those systems, we grew into worldwide support and other service support; we do a lot of support for other services in intelligence, surveillance and reconnaissance today.

We are key in operating those systems for the joint task force commanders. That aerospace expertise has broad customer orientation, and we provide that global capability in peacetime as well as wartime.



AF Intelligence Focus

- Build a foundation for battlespace dominance
 - Operate integrated network of systems
 - Provide in-time tailored intelligence
 - Support users worldwide, from crewmember to Commander-in-Chief



AF Intelligence Provides Global Awareness

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That focus operates an integrated network in peacetime, and also air reconnaissance programs. At any time during the day we have assets out there operating, less because of our operations tempo and some of the operations other than war that are ongoing today. Our global awareness that we provide now is worldwide, and a lot of that is in the TIARA program. Even though it is tactical intelligence support, it is global and worldwide, and could be construed as a little bit more strategic focus.



Intelligence, Surveillance, Reconnaissance: Core Competencies

TASKS

Operating Aerospace Reconnaissance Surveillance and Intelligence Systems

- Operators/Providers for world-wide users

Understanding Foreign Aerospace Capabilities and Forces

- Technical Collection
- Technical & Tactical Analysis

Intel for Aerospace Force Application

- Indications & Warning
- Campaign Planning
- Situation Awareness
- Targeting Support
- Orders of Battle
- Battlespace Management

CUSTOMERS

- 
- Operating Forces
 - Army, Navy, Air Force, Marines

- 
- Acquisition Community



- Policy Makers

8

The core tasks that we have operating the systems is a core task in the Air Force. Understanding foreign aerospace capabilities enforces the analysis that goes on within the Air Force. That is another specialized task, core task of the Air Force, and intelligence for Air Force applications, targeting, indications and warning, situation awareness, orders of battle, campaign planning, and battle space management.

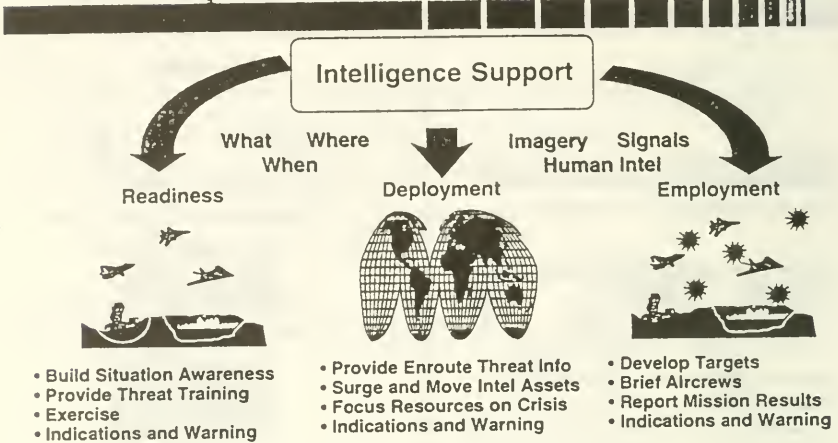
A lot of the large systems that we operate, such as Rivet Joint, have a major place-holder in our battle management plan. They are not just collection resources. That is why we have 17 positions on them to do on-board processing of information. It is not simply a collector.

Our customers are not only the warfighters but they are also the acquisition and planning community and the policymakers for the information.



Joint Air Operations

Operational Phases



Our support attempts to answer the what, when, and where for all stages, the full spectrum of the conflict, using imagery intelligence, signals intelligence, and human intelligence primarily. We have a full complement of sensors, and on some of the systems replaceable sensors for changing sensors, to be able to do that.

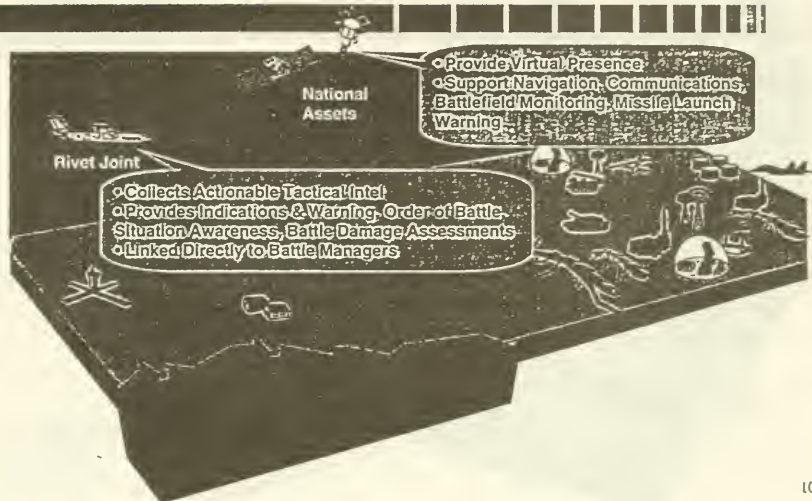
In readiness, in normal peacetime operations we are building situational awareness, we provide extensive threat training and intelligence preparation of the battlefield. Included in that, we provide support to exercises worldwide, and indications and warning throughout the whole spectrum.

As the operations tempo picks up because of increasing threats, we provide continuing threat info to our deployed forces—that is a challenge for us—surge and moving intel assets. We focus the resources on the crisis and start to deploy to the area, and last, in employment, from both developing targets, providing that information, and providing mission results, BDA being one of our major challenges among our tasks.

Next slide.



Intel on the Battlefield



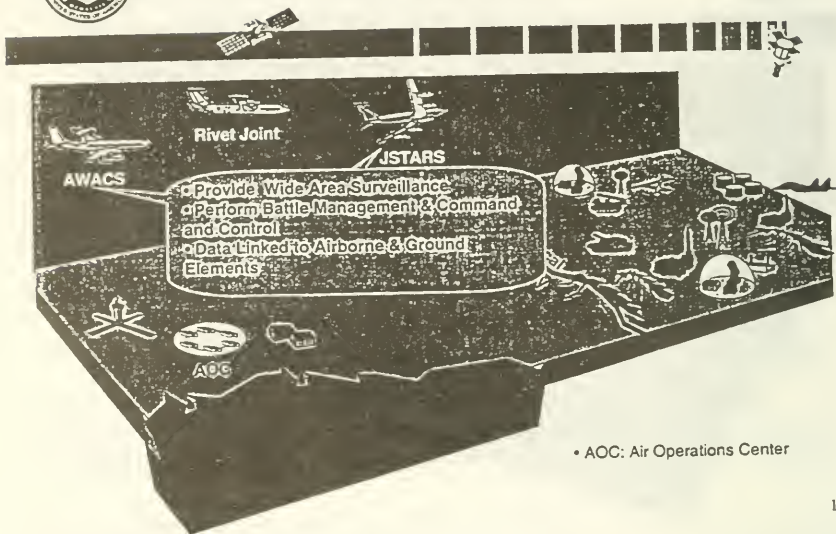
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In normal peacetime operations, peacetime aerial reconnaissance, we have both satellites and some of our major sensors deployed. Because of the operations tempo that we have today in Bosnia and in Korea, we do not have as many Rivet Joints, for example, available to do normal peacetime aerial reconnaissance program, but in the normal role we would be collecting actionable tactical intelligence, providing I&W, and it is linked directly to battle managers any time that it is airborne via data links.

Satellites likewise have cross links and data links that come down into the normal peacetime processing areas that you are familiar with.



Intel on the Battlefield



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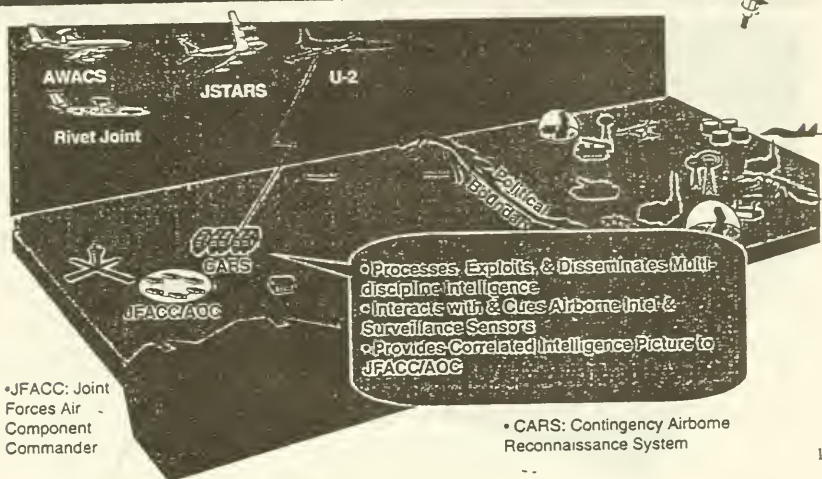
As hostilities are more imminent or there are problem areas in an operation other than war, we deploy more into the theater, and key to this is our air operations center. When we bring an air operations center into the theater, it will vary in size, depending on the problems in the theater, but the down links that are available there are primarily associated with the tactical data links.

This is the heart of our operations on all the systems here. We have data links that are on board. Of course, JSTARS is not yet deployed. It will reach IOC in 1997. But we have both voice, secure voice, SATCOM and Joint Tactical Information Display System, or JTIDS, on board these airplanes, and that is our primary communications with the operations center for us, just for Air Force only. We will talk more about other services in a minute.

Next slide.



Intel on the Battlefield



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The U-2, the 30-plus U-2s that we have worldwide are heavily tasked, heavily deployed, and when we come into the theater, we bring the contingency reconnaissance down link with it. That is the main processing set of vans that we bring in to process the information off of U-2 as it uses the varying sensors, both the imaging sensors and radar sensors that we can put on the U-2 packages.

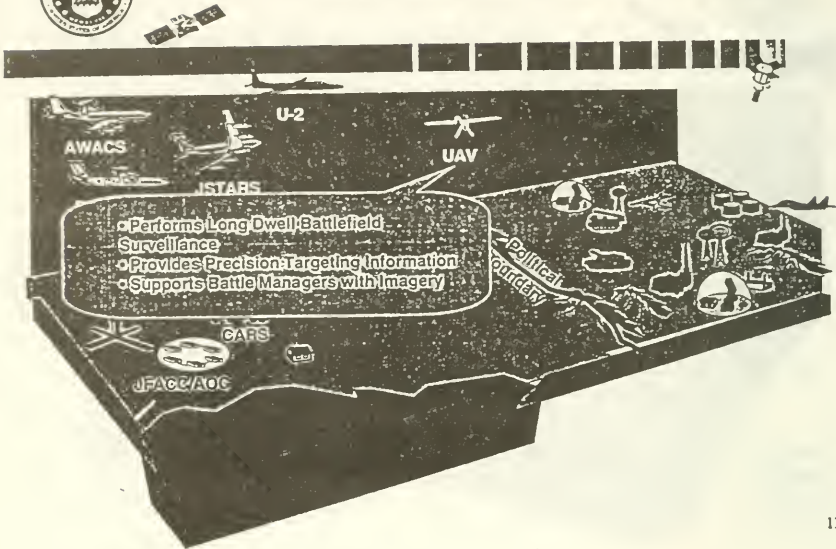
Senator COHEN. The time line on that is immediate?

General CAMPBELL. Sir, to process the information and disseminate the information is in seconds for that, and we can go over land line out of the CARS or via JTIDS off a satellite to come back if it has to come back to the United States. It is classified, and we can get into that later if you want, sir.

Next slide.



Intel on the Battlefield



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We are fully supportive of the DARO efforts developing UAVs. As you are aware, sir, most of the Air Force UAV efforts migrate through the DARO. In fact, all of them do, and we have a concept of operations in draft right now to be the primary operators of the high altitude endurance UAVs, both the LO and the regular one, and we are developing a concept of how to operate the medium altitude UAVs.

UAVs will provide long dwell over the battlefield, as you are aware, and we would like to—I know you had a hearing yesterday on that. The penetrating nature of the high altitude UAVs will be something that we will look at and fold into what we will do with U-2s and the SR-71 and our tactical reconnaissance systems, and we will phase that in as we get the first ACTDs on the UAVs completed.



INTEGRATED ASSETS

TIARA	Indications & Warning	Situation Awareness	Order of Battle	Campaign Planning	Targeting Support	Battle Management
Joint STARS	•	•			•	•
Defense Support Program	•	•			•	
Space Based Infrared System	•	•			•	
Combat Intelligence System		•	•	•	•	
Air Force TENCAP	•	•		•	•	
OTHERS						
Satellites	•	•	•	•	•	•
Cobra Ball	•	•			•	
AWACS	•	•		•	•	•
Rivet Joint	•	•	•	•	•	•
Combat Sent			•	•	•	
Joint Services Imagery Processing System	•	•	•	•	•	
U-2 & Contingency Airborne Reconnaissance System	•	•	•	•	•	

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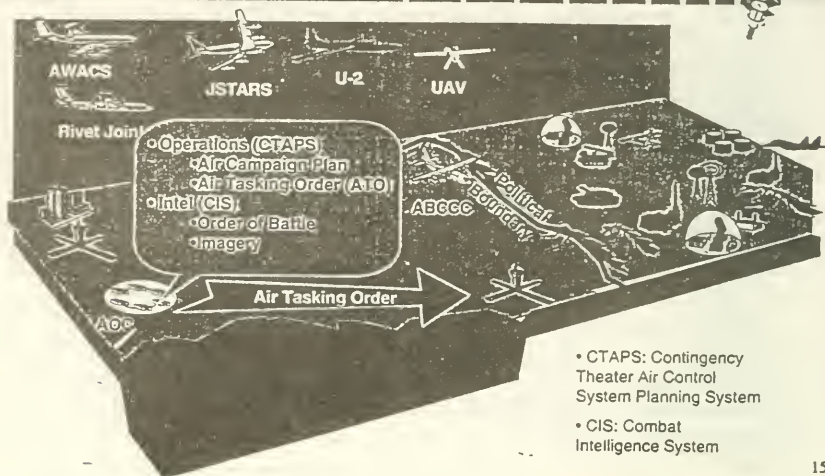
Summarizing the integrated assets, these are the tasks that we have in theater, and these are the programs in TIARA that accomplish those tasks. And these are the other programs outside of TIARA that we do operate that accomplish those tasks.

The link-up systems that we have, the combat intelligence system, is an essential real-time downlink to solve many of the problems that we had in the Gulf war, and, as General Anderson talked about, cutting the timelines for getting the information to the user. This is an essential key for us to do that.



Intel on the Battlefield

Mission Scenario: ATO Generation



15

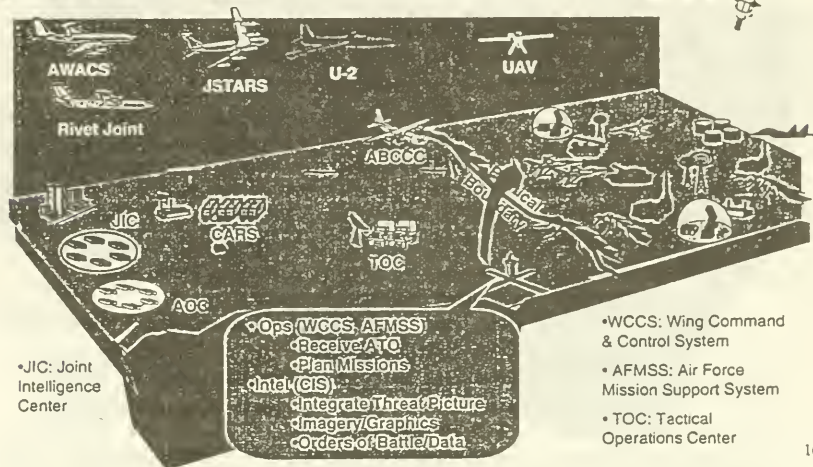
We will talk just briefly expanding the scenario that we had started. As we increase hostilities and bring forces into the area, the air operations center will be linked, either via landline by fiber-optic cable or datalink, to the wings. As information is passed from all our sensor suites into the operations center, considered, targets developed, plans of actions developed, we can pass information directly to the wing via our datalinks to the wing command and control system and the contingency theater air control planning system, or CTAPS, which is an agglomeration of our old systems that we used to build ATOs and to build the air tasking orders and to pass the information on to the wings to give the tasking. It will greatly speed up the capability to disseminate those.

As you remember, during the Gulf war we had to print out huge documents and fly them around to various units to be able to get the air tasking orders to them. This CTAPS system has been developed greatly since that time, and has proven in the last several exercises very, very, promising to speed the capability up to get the air tasking order to the units.



Intel on the Battlefield

Mission Scenario: Sortie Generation



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Senator COHEN. Is all of that encrypted?

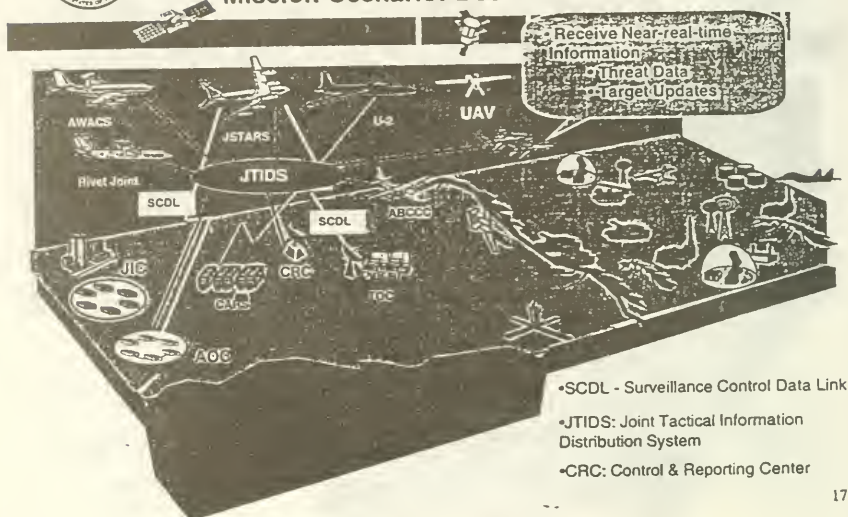
General CAMPBELL. Yes, sir, absolutely. The wing command and control system, or another acronym of WCCS, receives the ATO, splits it out into usable format for the local wing, customizes the information, and allows the wings to deal with huge amounts of information in a very rapid manner to be able to plan their own missions and execute their own missions. The wing command and control system is tied to our initial support system that is used in the squadron. It is another automated fashion to deal with all this huge amount of information, both imagery, maps, direct data, categorize it, and build automated routes to targets and to be able to go efficiently and safely accomplish the mission.

At this point the Army is in-theater with their tactical operations center, which is the heart of the air command and control system. And I will show you the communications links to that.



Intel on the Battlefield

Mission Scenario: Decentralized Execution



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Senator LEVIN. Why are they in different places, why is the Army and the Air Force?

General CAMPBELL. Our air operations centers, and the AOC? Sir, in some cases they may not be. In some cases they may be physically because the air operations center may be a huge number of miles behind. It could be physically placed somewhere else. Right now, we do not have a very good answer. They are both embryonic systems we have stood up. Actually, the Army has had a TOC for a long time. The operations center has been Air Force for a long time. In the past they were in different places because they had to be physically there.

Senator LEVIN. Why can we not have one for both?

General CAMPBELL. We probably could, sir. I do not have a reason that you cannot. The reason is place is becoming less important in the future because of communications breakthroughs and processing breakthroughs, so increasingly we might find that those things are not all in one place even themselves. They may be more distributed, so that distributed environment may be virtually all together, and it may be just seamless as to whether you are working one problem and he and I are 3 feet from each other or 3 miles from each other.

But the real answer is that there is no reason that there could not be except that if physically there is a reason in a theater that just the nature of the theater was that way. That is the only answer I have for that.

General ANDERSON. Sir, one other consideration in the past has been the vulnerability of systems depending upon what kind of an operation you were involved in. If you put everything together in one place and that place gets taken out, you have lost your entire

capability, and that was a driving factor in some cases as to why things were spread out in the past.

Senator LEVIN. Well, that does not say that the Air Force and the Army have to be separated. That just says you may want to separate that center into two or three pieces.

General ANDERSON. True. That is absolutely true.

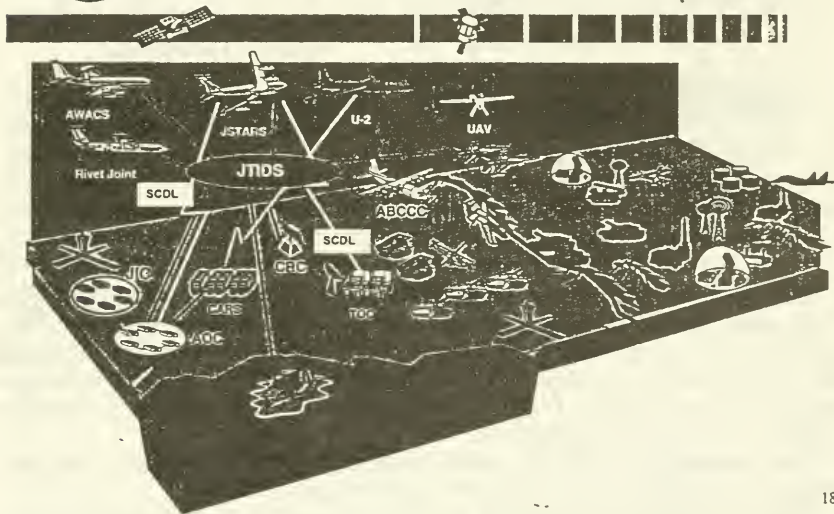
General CAMPBELL. Connectivity of all these systems as they are getting into the theater, the Air Force operates primarily under the Joint Tactical Information Display System, and you can see the systems that have red lines to them are all systems that have those either on board or are programmed to get those. The surveillance control datalink, or SCDL, is a bigger bandwidth pipe than the JTIDS, and a lot more information is passed on. The actual picture is passed on from the JSTARS to the current GSMs, or ground station modules, that will be the common ground station that the Army will develop.

Instead of a picture, the JTIDS passes icons on an information display system. It does not pass the whole picture.



Intel on the Battlefield

Mission Scenario: A Joint Perspective



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From the joint perspective also, when the Navy comes into theater we do interoperate with the Navy over the Joint Tactical Information Display System. We are putting this system on board U.S. Air Force aircraft. We will complete all of the F-15 force by the turn of the century. We are looking at options to deal with the F-16. This is our digitization of our shooters.

Senator LEVIN. Will you have the F-15Es by the end of the century?

General CAMPBELL. Yes, sir. One hundred percent of the F-15s will be by the end of the century.

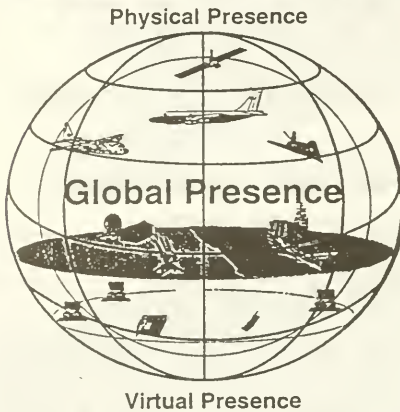
Senator LEVIN. But there is no timetable for the F-16?

General CAMPBELL. Right now we are looking at a timetable, sir. We are trying to get an affordable way to do this. If you try to pass everything on this and try to make it high tech it gets very expensive. We are trying to do it in a more affordable manner with the F-16. We have not decided yet.

We do have a datalink on the F-16 and we do have a datalink on the A-10s that we are putting on. But it is a limited datalink to be able to pass messages from tactical air control parties to be able to datalink up locations so we can attack targets in near real time on the battlefield for close air support.



FOCUS



FORCE PROJECTION
GLOBAL REACH
GLOBAL POWER

INFORMATION EXPLOITATION
GLOBAL AWARENESS

INFRASTRUCTURE PROJECTION
GLOBAL PRESENCE

The last slide I will show is that our focus is theater-wide, but it is also global. It is global in peacetime as well as wartime. We will have the continuing capacity with a lot of our sensors for what we call virtual presence. We are working hard to exploit information in a more timely fashion and pass that information out to the user in a more timely fashion.

Our capability, I think, will multiply greatly in the next few years as breakthroughs in these technologies occur.

This concludes my briefing. I will move now into the joint presentation.

[The prepared statement of General Campbell follows:]

PREPARED STATEMENT BY BRIG. GEN. FRANK B. CAMPBELL, DIRECTOR OF FORCES,
DEPUTY CHIEF OF STAFF, PLANS AND OPERATIONS

Supporting the warfighter is a common theme among the services today and in the recent past. Providing detailed, usable information to warfighters when and where they need it is critical if they are going to be successful in executing their assigned missions. Intelligence is one of the most vital elements of information the warrior can use. Today I am going to discuss Air Force Tactical Intelligence and Related Activities, an aggregation of Air Force programs which constitute a part of our service's total intelligence, surveillance and reconnaissance construct. My presentation will come from the perspective of the operator.

In order to provide committee members with an adequate understanding of Air Force TIARA, it is necessary to discuss it in its relationship to the Air Force's total intelligence, surveillance and reconnaissance architecture and how it applies to the warfighter. Air Force TIARA programs standing alone cannot provide the warfighter with enough information and functions needed to adequately prosecute the mission. Programs from the National Foreign Intelligence Program (NFIP) and the Joint Military Intelligence Program (JMIP) aggregates along with Air Force unique systems constitute the whole of the information pool from which the warfighter can draw what he needs to execute his mission.

Air Force TIARA programs continue to enjoy strong advocacy despite the fact that the Air Force is reducing and restructuring its personnel, programs and force structure. Providing the most timely and accurate intelligence support to Air Force and Joint commanders remains paramount. All the same, TIARA programs compete directly with other Air Force programs for resources and are planned and programmed as part of the overall Air Force budget. The end result is a shrinking Air Force, but one which is lean and capable across the full range of Air Force missions.

Management and oversight of national, DOD and service intelligence programs continue to evolve. A significant result of this process has resulted in the transfer of a number of activities previously contained in Air Force TIARA to other aggregations. Examples of this are the move of the RC-135 RIVET JOINT and the Joint Services Imagery Processing System (JSIPS) from TIARA into the Defense Airborne Reconnaissance Program which in itself became a part of the recently created JMIP. Although no longer part of the TIARA aggregate, these programs constitute a significant Air Force investment in intelligence capabilities and continue to play a central role in our integrated operations architecture.

In summary, Air Force TIARA programs will continue to play a major role in our warfighting capabilities. Individually and collectively, these programs are focused on providing our commanders with the best tactical systems needed to fulfill their warfighting intelligence needs.

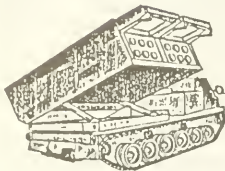
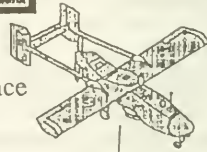
General ANDERSON. Sir, I would like to move into the final portion of our presentation, and that is joint operations, and that is bringing together some of these service-specific systems that we both described along with sensors and shooters and how that can be applied on the battlefield in a joint operation. We do that through a concept called joint precision strike concepts. I will describe that concept for you up front, then General Campbell will lay out for you a scenario, and then I will describe for you how we practice that so that it is more than just theory, it truly is reality.

Next slide, please?



Precision Strike Concept

- Sensors
 - Focused at Right Time, Right Place
 - Targetable Accuracy
- Shooters
 - Deep range
 - Accurate Fires
- Sensor to Shooter Links
 - Rapid, Reliable



Army
DCSOPS-FD

Sir, as I say, it is the precision strike concept that we use and this has evolved primarily to take a look at attacking very critical key targets. Components of this concept are, as you see here, the sensors and the shooters, and then those linkages to the sensors and the shooters. What we have to make sure is that any sensors that we have out there for precision striking—and if I may give as an example our potential target may be a Scud TEL or something like that—we would want to make sure that we have the sensors focused at the right place and at the right time to be able to pick up that target. Then again, as I described earlier, we would make sure that the sensor has sufficient accuracy to be able to give the target to the shooters that they need.

Now, the shooters have to have the capability to either be able to shoot far enough or engage far enough, depending upon what it is, with the accurate fires that they need to be able to engage those targets for a number of different reasons. That is fairly obvious to all of us. And then, of course, if those sensor-shooter linkages are reliable enough, because they have to be able to done very, very quickly, because for many of those precision targets that we are talking about such as Scud TELS, they are very perishable targets that move very rapidly.

Next slide.



Precision Strike Concept

•FASTER

- INCREASED MOBILITY
- LETHALITY OF MODERN WEAPONS



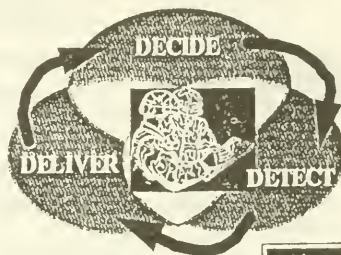
•CHEAPER

- LESS ROUNDS PER TARGET
- LESS FIRE MISSIONS PER EVENT
- LIMITED RESOURCES



•REMOVES UNCERTAINTY

- COMPLEX BATTLEFIELD ENVIRONMENT
- FIRST TIME KILL



Army
DCSOPS-FD

This concept has been developed primarily because of what we see to be the changes that are going to be brought about on the modern battlefield. First of all, things are going to be happening much, much faster. The increased mobility of the targets themselves, as well as the increased lethality of our own modern weapons systems, give us the capability on the modern battlefield, and it is certainly much cheaper if we can engage a target and destroy it with one round compared to massive numbers of rounds, as we have had to do in the past. And certainly, there are those that have sustainment considerations which for a force projection force is certainly very important in terms of the number of rounds fired, machines, and so on.

And then it removes uncertainty. In other words, we know for sure that we are going to be able to destroy that very, very important target, and so we have removed some of the uncertainty.

The cycle that we use to do that is the decide, detect, and deliver cycle. What it is is that the commander decides what are those high payoff targets, given what his plan is, that he must be able to destroy. Then once he has done that, it goes to the action part of focusing the sensors on the target, and then the delivery part.

Next slide.



Intelligence Support to Precision Strikes



DECIDE: Target Development

- High Payoff Targets
- Target Areas of Interest

DETECT: Target Acquisition

- Precision Location



DELIVER: Sensor-to-Shooter Links

- Broadcast Intelligence

*DECIDE: Battle Damage Assessment
(Second Cycle) Update Target Development*



Army
DCSOPS-FD

If you look at the intelligence support that fulfills each of these cycles, or elements of the cycle, then, of course, you see that, in terms of the deciding part, once the commander has identified those targets—and those targets are developed largely through the analysis of the intelligence preparation of the battlefield beforehand, and then the acquisition of those targets—but nonetheless, the deciding part of it is to identify the high payoff targets and then to identify the areas of interest where you can expect to find those high payoff targets. Then again taking the detection—the target acquisition which gives you the precision location—and then the delivery part of the cycle is the sensor-shooter linkages which come about as the result of the broadcast intelligence.

The last part of that is the decide piece where you have to go back and do the battle damage assessment to determine if you want to reengage.

Next slide, please.



Yes, sir?

Senator COHEN. Does greater complexity lead also to greater fragility? You have read, I am sure, Toffler's book "War and Anti-War"?

General ANDERSON. Yes, sir. I have not read it, I must confess.

Senator COHEN. And the hand that holds the sort of technology also can be severed by countermeasures which can be very simple compared to the level of technology it is designed to intercept, and he points out that a Saddam Hussein, for example, not aware of how easily he might have engaged in certain jamming techniques that could have prevented some of our more sophisticated systems from getting in. So the question is you have got greater complexity, and it is very impressive as you look at the charts, but is there an element of fragility involved that can be countered either easily or cheaply by the potential enemy?

General ANDERSON. Sir, I think there certainly is. The premise is absolutely correct. What I would like to think is that because we have done this very detailed analysis and laid out the complexities of the system, we are able to identify where the weaknesses and vulnerabilities are, and what are the work-arounds that allow the system to continue to work. So I would like to think that we have adequately addressed what is a fragility. But, I mean, we are developing a capability, but we are definitely very sensitive as to whether we are really also developing a vulnerability, and that is what we are trying to examine here.

Senator LEVIN. While you have that chart up there, and just pursuing Senator Cohen's question, too, in addition to countermeasures that make it fragile, there is also just pure complexity on its own which could collapse it at some point. So what you call work-arounds become extremely significant. I used to call them backups. I guess work-around is a new word for it. But at any rate, whatever you call them, could you at some point give us what you have in mind, and maybe it is classified, but in some manner give us what are some of those work-arounds or those backups that you are looking at? That, to me, is as critical as what we are doing here, because, for obvious reasons.

So if you could give us that either on the record or at some point.

General ANDERSON. We will do that on the record, sir.

[The information follows:]

WORK-AROUNDS

Work-arounds provide redundancy for intelligence sensors and intelligence communications to ensure that tactical intelligence is collected and reaches the warfighters who need to act on it.

Our sensor architecture is designed to provide multi-disciplined sensing of targets in order to provide requisite accuracy and to prevent deception. This multiple sensor redundancy also serves as a work-around, as loss of one sensor or the communications from one sensor does not completely blind the intelligence system. This reduced coverage increases risk of deception but ensures target coverage as the remaining disciplines will continue to collect and report information. For example, if video links from Unmanned Aerial Vehicles (UAV) were lost, Signals Intelligence systems and Long Range Reconnaissance Patrols (LRRP) would continue to locate and identify targets. Risk occurs because signals intelligence (SIGINT) can be deceived with decoy emitters and the LRRP teams cannot be rapidly reoriented to new areas of interest nor cover as large an area as UAV.

Intelligence communications work-arounds provide alternate routes for intelligence information, and fall into three categories: alternate communications paths that connect the same systems and can pass the same type and volume of information; use of an alternate system to process and pass similar information; and the

"last resort" fallback using secure voice communications to pass small volumes of the most essential information. Which work-around would be used would depend on the nature and duration of the problems encountered with the primary links. Localized problems would be solved differently than disruption extending over a large area and effecting many systems. I will briefly describe some examples of work-arounds that exist today or are being added during the program years.

Example No. 1: Ground Based Common Sensor (GBCS) and Advanced Quickfix (AQF) have direct datalinks to the Field Artillery Tactical Dissemination System (FATDS)/Advanced FATDS (AFATDS) system, passing precision location information. Common Ground Station (CGS) development includes adding an ability to receive the same information. We are developing links to pass the same level of information from GBGS and AQF to the CGS. If the direct datalink between GBGS or AQF and FATDS/AFATDS fails, the data could be monitored by the CGS located at the Division Artillery, which is connected to the same artillery systems. GBGS and AQF also datalink more detailed intelligence to the All Source Analysis System (ASAS), which can extract and relay the targetable information to Army Tactical Command and Control System (ATCCS) workstations at the artillery units as a further work-around.

Example No. 2: Unmanned Aerial Vehicle imagery is passed to the Common Ground Station (CGS) via the UAV Ground Control Station (GCS). The existence of two GCS per UAV baseline provides an ability to change controlling stations as a solution to localized interference problems. We are considering adding direct links from the UAV to the CGS as a work-around if the GCS-to-CGS link is lost. Finally, the remote video terminals provide an additional back-up for receipt of the UAV imagery, and can be moved to optimize signal strength.

Example No. 3: Guardrail Common Sensor intelligence is relayed from Guardrail's Integrated Processing Facility directly to the Common Ground Station and to artillery, air defense, and aviation systems using the Tactical Reconnaissance Intelligence Exchange System (TRIXS) via the Commander's Tactical Terminal. A work-around if this broadcast is lost would be relay of the targetable intelligence to the Corps ASAS via standard area communications. That ASAS is linked to the ASAS workstations at division and below and to Common Ground Stations.

From these examples, you can see that we have thought through the need for alternate paths to get critical information to commanders when the primary links are lost or interfered with. We will continue to analyze the critical links and build work-arounds into our architectures.

Senator LEVIN. While you have got that chart up there, where is your dismounted soldier there carrying your sensor, your camera?

General ANDERSON. Sir, you will see right here we have long range surveillance teams and our special operating force teams. These are the guys that are equipped with those kinds of capabilities that are out there.

Senator LEVIN. Okay, that is the guy that is out there on the ground taking the picture that goes to your truck that goes to your plane that goes to your shooter. Okay, but he is on the chart, at least, because he was not part of the overall architecture, I notice, in your earlier charts. I did not see where that dismounted guy out there on the battlefield or near there was on that chart. I guess it was just labeled sensors.

General ANDERSON. These fellows I am trying to depict here, sir, are those who have a specific mission to be out there surveilling the target, and these are basically covert people. These are the guys that are sneaking around out there. I think the fellow that you are referring to is the soldier who is at the pointed edge of the spear and who is facing the enemy, and that is this fellow.

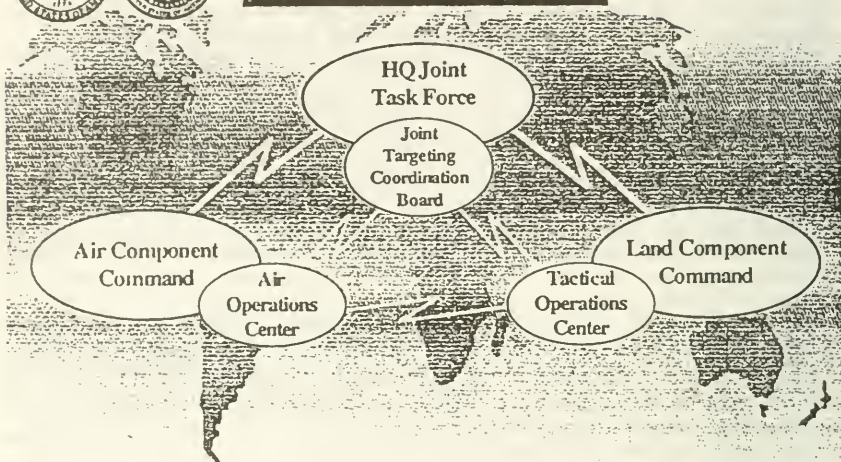
Senator LEVIN. No, I was talking about the guy with the sensors.

General ANDERSON. Okay. No, that is these.

Senator LEVIN. Okay, thank you.



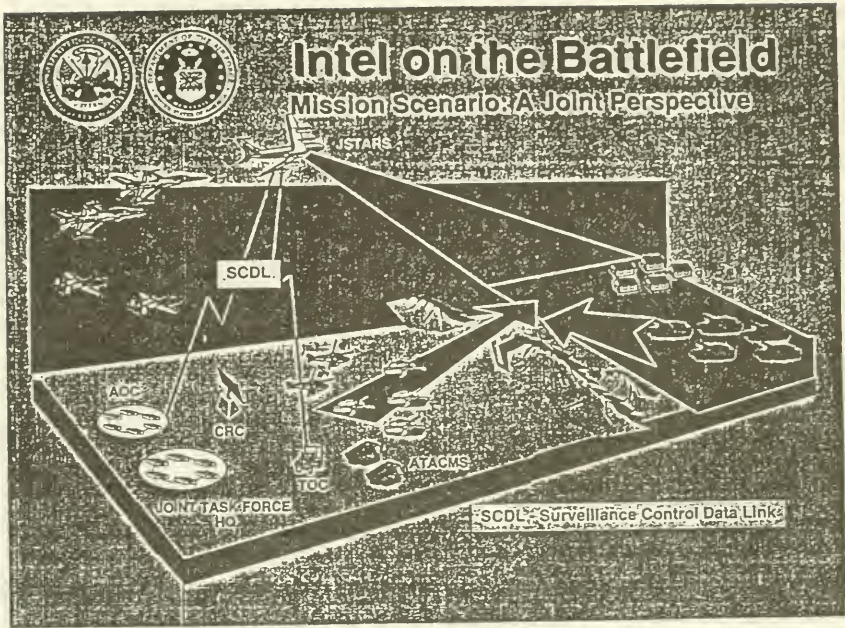
Joint Relationships



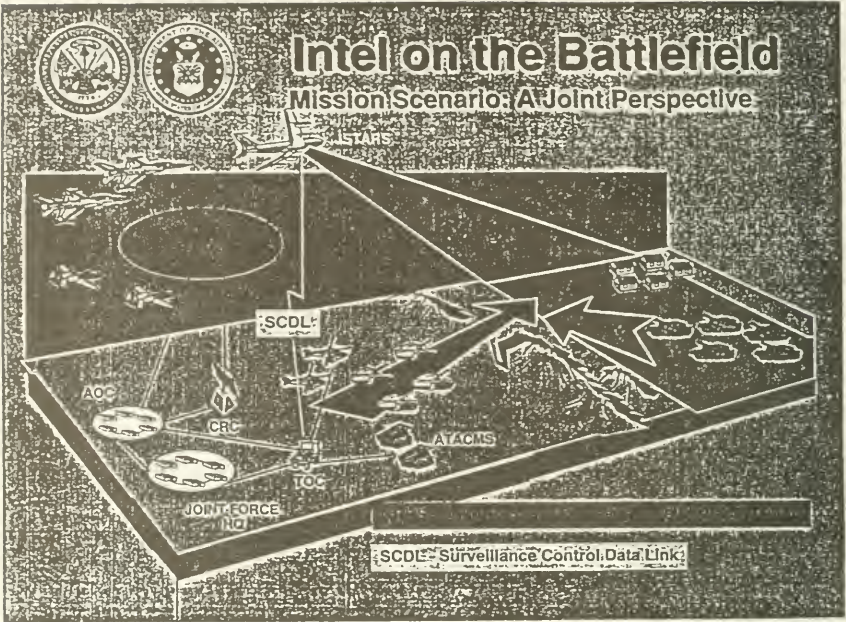
General ANDERSON. Sir, these are the key players in a precision strike concept. What we have here is the joint task force and then the various component commands, the air component commander and the land component commander. They coordinate the determination and decisions of what target is to be engaged and what resources will be used to do that.

The air component is a centralized decide part of the process. What happens is the air component commander and the land component commander will nominate target priorities, target attack capabilities, and those kinds of things to the joint task force. They convene a joint targeting coordination board who then develops a plan based upon the input from each of these elements and other elements that are part of the command, and then develops that plan and passes that to each of the elements.

Now, in the decentralized detect and deliver pieces of this cycle, what happens is each of these commands, with their own resources and in accordance with the plan that was developed at the JTF level, then go forward and engage the targets and conduct the battle. What I would like to do at this point, sir, is turn it over to Ted, and he will describe for you a scenario that kind of lays this out, and then I will come back.



General CAMPBELL. The scenario that we have emplaced over the same graphic we have been looking at basically has target categories back behind the lines, deep initially, where Joint Stars can detect, as we have done before. Joint Stars was actually in the Gulf war doing that. Immediately, the picture the Joint Stars sees is seen simultaneously in the tactical operations center and the air operations center.



Initially, Joint Stars, over the JTIDS link, immediately can pass targets to on-board fighters or the tactical operations center to pass to the shooters. Both of those actions can be very, very quick. We have demonstrated both of them, and actually General Anderson will talk about some of that demonstration here in a minute.

We know that Joint Stars can detect moving vehicles with its NTI radar or its synthetic aperture radar. We can also detect and zoom in and refine a little bit.



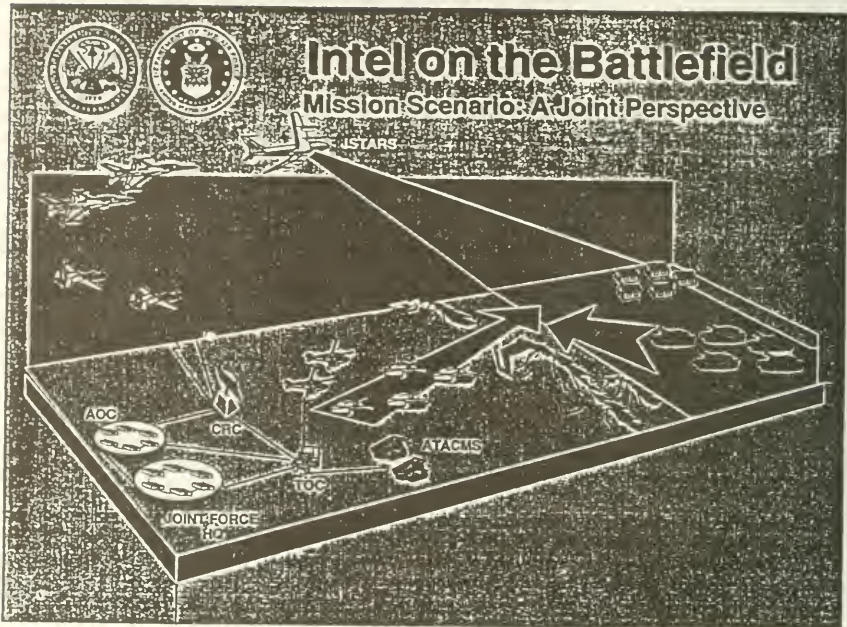
But our more precise sensors are on board the U-2 today, and with the ASARS capability on here, the imaging capability, we can actually get quite precise and tell essentially good guys from bad guys and get target quality data. As I said earlier, it comes through the CARS station to downlink out and get back out onto the net is very, very quick, and we have demonstrated that and we actually have that working in Korea today.

The UAV, likewise, can carry an imaging capability. And General Anderson will talk a little more about that.

General ANDERSON. These are close-range and short-range UAVs which give you the direct datalink for the brigade commander and division commander who are right in the area. So if it is an Army system that is intended to engage the target according to the plan, then what it would be is the information of the UAV would be passed directly to that commander and he would link into the various shooters that we have, whether it be ATACMS or other forces.

General CAMPBELL. Via datalink, we have also passed this same picture from the U-2 down to the CARS, back up to the fighters. We have demonstrated that capability using our TENCAP capability, TENCAP being a TIARA program, and that is one of our great success stories. We have demonstrated that once already and are getting ready to do that again this summer. That capability gets us the capability to lay side by side infrared pictures on board an F-15E and go in and pick out from several different targets the target that is of the highest interest, for example, to find the control van instead of just a truck.

Next slide.



We would then task the shooters to penetrate and attack the targets.



Joint Exercises

Key Source of Concepts and Testbed for Procedures

ROVING SANDS 95

- Army, Navy, Marine Corps, and Air Force
- 27 April - 9 May, 1995
- At New Mexico and Texas facilities
- Objectives:
 - Joint Composite Strikes
 - Theater Missile Defense
 - Integrated Air Defense

General ANDERSON. Now, sir, I would like to describe just very briefly for you an exercise that was just concluded today, as a matter of fact, but which has been ongoing for a couple of weeks now and has involved about 24,000 different soldiers, sailors, and air-

men down in El Paso, Texas, in Texas and New Mexico, where in fact that scenario that you saw on that battlefield that Ted laid out was replicated down there. So we had ATACMS missile launchers there, we had Apache aircraft there, we had the fighters there, we had the AOC there, the CRC was there, the TACS were there, and we had simulated TELS that were working in an opposing force that was out there. In fact, what we were trying to do was to refine this process and develop it in terms of actually taking the theory and putting it on the ground and practicing it.

So it was a joint exercise involving the Army, Navy, Marine Corps, and the Air Force, and as you can see, these were the objectives that we had. We were focusing largely on theater missile defense, so that is why we had the TEL kinds of targets out there.



Conclusion

Service systems interoperate to strike key targets:

Joint Concept

System Interfaces

Refined and Proven in Exercises

Sir, in conclusion, what we have tried to show you here is that in fact, in this particular case, we do have a joint concept. It is called the Joint Decision Strike Concept. We have also demonstrated this at Fort Belvoir at our tech center. There is the joint precision strike demonstration and we would like to invite you and your staff to come out there anytime that you would be able to do that.

We have identified what the system interfaces are that need to be either adjusted or developed, and we have refined and proven these things in the exercises, and we will continue to work this. We are not suggesting we necessarily have the exact solution. We do not know until we get it out there and actually try it. That is what we are trying to do, and we are going through the analysis of that exercise right now to determine what refinements will be necessary to this concept.

Sir, that concludes our briefing, subject to questions.

Senator COHEN. Thank you both for your fine presentation. I was thinking, as you were concluding your remarks of the complexity

of the systems that are involved, on the one hand needing complexity to make the warfighting perhaps not simpler but more lethal and more immediate, and I am thinking of analogies as I was watching you. It is going to require a much better trained individual all down the line, a much higher grade of people coming into all of our forces in order to deal with the new technology.

And second, when I think about the vulnerability of the system, to put it in a different context in that when I operate a microwave at home, and it goes on the blink, I have got a stove over here that can compensate for it. The same thing, I assume, is true. We know we are getting greater connectivity in our offices here on Capitol Hill. There is an item in today's publication called "The Hill," in which an outside audit team was able to penetrate quite easily all of the systems on the House side; namely, to get into each individual member's computer to get private information and to either alter that information or to disseminate it elsewhere. I think that that also is part of the problems you have, all of that material being hummed down on various frequencies and velocities to the receivers in order to carry out the execution and then a lot of things can go wrong in terms of a battlefield scenario, so there have to be some backup systems to carry out a warfighting capability.

What happens when you go to the airport, for example, and they say, "Sorry, our computers are down?" Everything stops. People are backed up out into the parking lot because the computers are down. And I suspect we have potentially the same sort of situation that can confront all of us in the warfighting scenario when the computers go down and we do not have the kind of capability of reconnecting them in a real time-sensitive fashion.

Let me just give some general observations, just recalling some of Toffler's comments in "War and Anti-War." General Anderson, from your testimony it looks like the common ground station is the hub for relaying all the information to the sensors and the shooters. Could you sum up what sensors and weapons systems it is currently linked to now, and what it will be linked to in the future?

General ANDERSON. Sir, right now the common ground station receives the information from JSTARS. It will receive information from the signal intelligence systems such as the Guardrail common sensor and those kinds of things. And it will also be able to, or does at this point, receive information from national and theater intelligence systems.

In the future, what we intend to be able to do is to be able to receive the imagery, secondary imagery system information, as well.

Senator COHEN. And, General Campbell, my understanding is the Air Force is now rethinking the notion of getting out of the manned tactical reconnaissance. Is that being rethought by the Air Force? Are we going to reinstate that mission?

General CAMPBELL. Yes, sir. We are reinstating that mission. We close down our F-4s the end of this fiscal year, as you know. The answer that we are pursuing right now is getting back into the tactical air reconnaissance business with pods on F-16s. We are putting a line into the budget now to reinstate that, and we are trying

to pursue an interim capability on our Air National Guard F-16s until we bridge to that common capability.

That common capability will undoubtedly be part of the Joint Tactical Air Reconnaissance System pod that was previously approved, and we will be getting back into that program.

Senator COHEN. General Anderson, I want to follow up on the question that Senator Levin asked you earlier about having a joint operation between Army and Air Force. In the architecture you described, in both all-source analysis system—the ASAS—and the common ground station, why do you have to have two echelons of these intelligence processing systems? Can you not have one?

General ANDERSON. Sir, the two systems perform—the answer to your question is no, in our view. We need to have both. The common ground station is more of a system that is the battle commander's station, if you will, so that he can monitor the battle as it is taking place. So he has the takes from the JSTARS that are looking at the battlefield immediately and he gets that near real-time feedback of how the battle is developing, but he can make adjustments.

The ASAS is a system that correlates a number of different intelligence sources and paints a picture that allows you to do planning and preparation for, and assessments of, future systems or future efforts. So the ASAS tool is more of a planning tool, and the common ground station, to simplify it, is more of a battle station that gives you today the real picture right now of what is going on on the battlefield.

Senator COHEN. In other words, in the common ground station, you are here looking at the action as it is. In ASAS, you are looking at what is coming over the horizon, what other options you might have to pursue, what forces are gathering, and what changes in tactics are being adopted by the enemy, as such. You have to combine those two to play the war right now as it is happening and what is coming over in the next wave. Is that why you need the two different systems?

General ANDERSON. Exactly, sir. The ASAS is a predictive tool, and the common ground station is a real-time tool.

Senator COHEN. I think, General Campbell, you may have answered this question, but my understanding is that DARO was created in part to ensure enough attention being given to the development acquisition of the UAVs.

General CAMPBELL. Yes, sir.

Senator COHEN. And my understanding, I think, from your statement is that the Air Force view the UAVs and other reconnaissance assets positively.

General CAMPBELL. Yes, sir, we do. We fully support DARO's efforts, and are implementing plans to operate and inherit those systems and procure those systems once the advanced concept, technology demonstrations are over.

Senator COHEN. General Anderson, we looked at your charts here. Brigade level architecture show the close range unmanned aerial vehicles as the single sensor dedicated to the brigade commander. What is the status of that particular brigade UAV?

General ANDERSON. Sir, that is, as I pointed out to you, a very important part for us, and that is the brigade commander's only ca-

pability to look over the hill, so we are watching that very, very carefully.

Senator COHEN. When is he going to receive the system?

General ANDERSON. Well, sir, the draft RFPs have been released. The program is managed under the joint program office, and the acquisition executive is the Navy acquisition executive, and I only tell you that for information. That does not create any problems or anything. But the draft RFPs have been released and comments from industry indicate that once the final RFP is released—and that will be released by DARO, they are the ones who have it—then they expect 30 months after that we should be able to see the system. So it is conceivable that we could have it by 1998, sir, specifically.

Senator COHEN. General Campbell, in the wake of Desert Storm, as you know, there were a lot of complaints about the absence of tactical intelligence being disseminated throughout the theater. What has the Air Force done to improve the ability to disseminate intelligence?

General CAMPBELL. Sir, you asked an interesting question earlier of you need two echelons of information. Everybody wants to see the raw data until they start seeing it, and it ends up being so much they get overwhelmed very quickly. So we must process the information, yet we must give some amount of raw data to the on-scene commanders.

Our problems, the long poles in the desert, were communications, number one. The communications infrastructure was rough, we did not have enough secure links, we did not have enough time on satellites to get over-the-horizon links, we did not have a real reliable capability to pass imagery around, and we are very imagery-hungry right now. As we go toward precision weapons in the Air Force we will want more and more and more imagery, and we do.

We have put in place a combat intelligence system capability with some communication links. Admittedly, the communications are coming slowly. It gives us the ability to pass, basically, an intelligence Internet, if you will. We will be able to pass information rapidly and in formats that are user friendly, and we have those in place today at Aviano and Vicenza, and in Riyadh we are putting them in place and supporting our forces that are in operations other than war.

We can do on them mission planning; we can pass situational awareness; we can pass imagery, raw imagery. Not finished imagery yet, we cannot do processing yet. We have a system to do that, but that is one that will be in place later. We can do real time SIGINT broadcasts coming in, and we can connect to the rest of the world through this system. I think, that is one of the big success stories since then.

One of the other problems we had in Desert Storm was passing mission planning kinds of information down to the squadrons. This will take care of this as we interface this with the squadron's level mission-level planning capability.

Senator COHEN. Senator Levin.

Senator LEVIN. Thank you.

Thank you first for a very well-done presentation here. I have been out to the desert, and I must tell you the potential is absolutely extraordinary here.

Senator COHEN. Were you there for 40 years?

Senator LEVIN. I got quite a sunburn, as a matter of fact.

But the potential for problems is great, too. I do not want to dwell on the complications, but again, I think Senator Cohen's point is that the breakdown could be catastrophic unless there are backups. And so I am glad to hear you are worried about that, because we cannot put all our eggs in that one basket because those eggs are fragile. Indeed, they are fabulous when they work. I mean, there is nothing that comes close. But if they break down, the disaster would be fabulous, too, I am afraid, so we do have to spend time on backups or go-arounds or what did you call them again?

General ANDERSON. Work-arounds.

Senator LEVIN. Work-arounds.

First, I was interested in what you said about the F-15Es as to their getting these datalinks, that that is in the plans, because I think you gave a year?

General CAMPBELL. Sir, I said that, and I may have misspoken there. We put it on all the C models by the turn of the century, and I will have to go back and recheck.

Senator LEVIN. Would you check, because my understanding is there is no plan to put them in the F-15Es, which is a mistake. I think the Air Force submitted a congressional committee prioritized list of how it would spend extra funds if extra funds were made available, and that list shows that the Air Force would rather acquire more F-15s and F-16s than spending money on getting more of these datalink capabilities, and that is something of a mystery to me, because we could get a several-fold increase in combat capability near term with a much smaller investment in datalink capability, while Air Force's preferred use of any additional funds would give us more aircraft that are parked in desert storage.

I would like you to check that out for us, if you will.

General CAMPBELL. Yes, sir, I will.

Senator LEVIN. I am not sure what committee that list was provided to—the Appropriations Committee over in the House. If you could go back into that and tell us whether that is the current priority list of the Air Force, and if so, why? Why we would want more planes to park since we have already met our needs, rather than to invest in these datalinks which are so important for F-15Es and for the F-16s?

Senator COHEN. Perhaps, General, you could respond by what your personal view might be.

General CAMPBELL. Sir, I will tell you in the case of the F-15E that additional procurement is because we did not procure, because of affordability, an attrition reserve for the F-15E. That additional F-15 procurement keeps us into a healthy force to the year 2015. Otherwise, we will have to start drawing down PAA by then. Obviously, sir, the datalink for the F-15E is a lot smaller number than the additional procurement there, as you suggest, and I will tell you we are looking at data for the F-15E. We will end up with data

on all of our aircraft. It is merely a matter of affordability and what that data will look like.

Senator LEVIN. Can you do two things for us? Give us the amount of dollars when you answer that question. How many fewer F-15s would buy us the datalinks for the F-15Es, and the same thing with the F-16s. And what is the additional capability that would be provided with those datalinks on the F-15Es and F-16s? Could you describe for us now what you would gain with that package?

General CAMPBELL. Sir, you get near real-time sensor to shooter to be our end goal. Your capability, obviously, is to speed up your decision loop capability. It makes you much more effective in combat. But right now, we do have data capability on some F-15Es, and we have demonstrated that using TENCAP TIARA programs to be able to bring sensor to shooter in there. We know how to do that, it is merely completing the weaponizing. If we had to go to war today, we would manage to add datalink into those F-15s.

Senator LEVIN. What does the JTIDS add to what you have got there already?

General CAMPBELL. JTIDS is a broadcast net, sir, that has all those people on board. You would get information shared by that mutual force that we showed up in the air which we tried to keep simple by showing only one of each, but obviously, there are hundreds if not thousands of people that are on that net. The data that we are using right now in the F-15E that we have used in demonstrations has been simply from one sensor, a dedicated net, not a broadcast net.

Senator LEVIN. Would it be fair to say you would have better both situational awareness and better target information with the JTIDS on board?

General CAMPBELL. You would certainly have better situational awareness. Whether or not you get better target information out of a JTIDS, remember, JTIDS just passes icons. It can cue you as to one target being this type of enemy or that type of enemy, not necessarily better target information.

Senator LEVIN. But is that valuable?

General CAMPBELL. Yes, sir, it is valuable.

Senator LEVIN. Is that better target information?

General CAMPBELL. Yes, sir.

Senator COHEN. Could I ask, would you make an analysis in terms of warfighting capability? Could you do a comparative analysis between more F-15s or better-equipped F-15s with the intelligence capability? Do you get more in terms of warfighting capability with a real-time intelligence capability that this would give you as opposed to having more F-15s without it? Basically, we want to see a comparative analysis of what you get for the F-15 versus the ones that are equipped with the intelligence capability.

Senator LEVIN. One F-15, the cost of an additional one, buys you X number of JTIDS on F-15Es. Which would you rather have, why, and what is the warfighting capability. Would you do the same thing on the F-16?

General CAMPBELL. Yes, sir. We will.

[The information follows:]

TACTICAL INTELLIGENCE AND RELATED ACTIVITIES

Buying additional F-15Es and F-16s or equipping current aircraft with a data link capability are separate but important issues. The Air Force requirement for additional aircraft allows us to replace attrited assets, sustaining the number of combat-coded aircraft to support two MRCs. These aircraft keep the Air Force at the required 20 Fighter Wing Equivalent level mandated by Secretary Aspin's Bottom-Up Review. The Air Force data link requirement will increase the lethality and survivability of these aircraft by increasing pilot situation awareness and improving their overall efficiency. Finally, both the fighter data link and additional aircraft enhance and allow our nation to perform our requisite combat operations. The issue is not trading capabilities but meeting minimum force level and enhancing that force's combat capability.

Senator LEVIN. We in the subcommittee over the years have been strong supporters of the JSTARS system. The program seems to be moving along well, and it has had really good success in field testing during Desert Storm. We are reading some press reports that both the Air Force and the Army are considering increases in the planned inventory level for JSTARS, and I am wondering if you can tell us what is going on in that. Is there a planned increased purchase of JSTARS in either Air Force or Army?

General CAMPBELL. I will address that first, sir, since we are the procurers of JSTARS. Right now, we have no money in the budget past the procurement of 20, but the budget only runs to 2001 right now in our plans. We are looking at an additional procurement of JSTARS. Because we do not deal with that in our 5-or 6-year plan, we have not yet put that in. I can only tell you that we are studying that, sir.

General ANDERSON. Sir, our responsibility in the JSTARS program, of course, is the ground station. Our current basis of issue will remain the same. In essence, it is driven by the number of units that they go to, not by the number of aircraft that services them.

Senator LEVIN. Can you tell us the status of the Hunter program? I may have missed that. You may have already done that, but the Department apparently is intending a fly-off, I understand, between Hunter and Predator?

General ANDERSON. Sir, as you know, the Hunter program had some difficulty and had an independent evaluation that was concluded, and the conclusion was that there were no technological challenges in that Hunter program; however, there has been mandated by OSD that we will do a Hunter-Predator fly-off, and we are in the process of defining precisely what that is.

The Army is given responsibility for designing that. Our intent is to use, to the extent possible, analyses and simulations to be able to determine the Hunter's capability to perform the requirements that they have, and then where we are unable to satisfy ourselves on using simulations and analysis, to conduct some sort of a flying demonstration to determine that.

Senator LEVIN. And what is the schedule for that fly-off?

General ANDERSON. Sir, the demonstration is scheduled to be concluded by October of this year, so it is a very ambitious schedule, as you can well imagine, and we are putting the milestones together now that will lead to that.

Senator LEVIN. One more question that I have, and that is a battle damage assessment. What have we learned from the Gulf war, and how have the Gulf war lessons affected that program?

General ANDERSON. Well, regarding battle damage assessment, sir, first of all the effect on us has been a reaffirmation of a well-known point, and that is the importance of battle damage assessment. Furthermore, it is confirmed that we do not have an existing capability to do battle damage assessment, and so it places much greater importance on programs such as the Hunter and the UAV in terms of the organic capabilities to be able to do it? And then, of course, the Air Force has some of their systems that will greatly contribute to that, as well.

So I am not saying that we have solved the problem. We have systems underway and on the way that will give us the capability to do a much better job of that.

General CAMPBELL. Sir, if I can add to that, some of the problems out of the Gulf war were incomplete standards and many sources of BDA. And there was not a uniform standard in the theater as to when we called something damaged or killed or so on. We have undertaken a task in the JCS to come up with those standards. That is one step. That is an administrative step.

Improving sensors and improving capability to determine levels of damage is also something that we have done, and we have done that with going into our existing sensor suits that were high resolution and seeing what we could do to enhance capability to tell those things. We have made some strides in that. We have certainly not solved that problem. That is a very intractable problem.

Senator COHEN. I have an additional 10 or so questions here I would like to submit to you for the record. I have a meeting with Admiral Boorda that starts at 4:30, and we have taken care of the Army and Air Force, and now I am going to deal with the Navy shortly. Is there anything of a classified nature that you feel should be conveyed to the committee at this point?

General ANDERSON. Sir, I do not believe so.

Senator COHEN. I will submit these questions to you for the record, and then you can respond in due course.

I would add my own thanks to Senator Levin's. Thank you for a fine presentation. It is very important information, and hopefully we will be able to fund some of the programs. Staff reminded me that last year I think it was the House that deleted funding for the UAV. Nonetheless, monies were appropriated for it. But we are in that status our appropriation is without authorization, and hopefully we can see if that cannot be corrected this year.

Thank you very much. The committee stands adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR WILLIAM S. COHEN

DEFENSE AIRBORNE RECONNAISSANCE OFFICE

Senator COHEN. General Campbell, I understand that the Defense Airborne Reconnaissance Office was created, in part, to ensure enough attention is given to the development of Unmanned Aerial Vehicles. What is the Air Force view of Unmanned Aerial Vehicles and other reconnaissance assets under the Defense Airborne Reconnaissance Office?

General CAMPBELL. The Air Force fully appreciates the utility of UAVs, and we believe we have a valuable role to play in all long-range, deep-look reconnaissance—including High-Altitude Endurance UAVs. We support an integrated, coherent reconnaissance system including the flexibility and responsiveness of our workhorse manned platforms and the advantages of unmanned platforms.

COLLECTION AND DISSEMINATION OF INTELLIGENCE

Senator COHEN. General Campbell, in the wake of Desert Storm, there were numerous complaints about the dissemination of intelligence to theater commanders and forces. What has the Air Force done to improve its ability to collect and disseminate intelligence?

General CAMPBELL. After-action reports from Desert Storm identified specific problems with intelligence dissemination, including too many stovepiped dissemination systems and a lack of connectivity to users. We have addressed these problems by putting a single, robust Combat Intelligence System into place.

Our number one problem in the desert was communications. The communications infrastructure was rough, we did not have enough secure links, we did not have enough time on satellites to get over the horizon links and we did not have a really reliable capability to move imagery. We are very "imagery hungry" now, and as we continue toward precision weapons we will need even more imagery. To remedy these shortfalls, the new Air Force Combat Intelligence System includes communications links. It gives us the ability of an intelligence Internet, if you will, and we will be able to pass information rapidly and in formats that are user-friendly. We have this system in-place today at Aviano AB, IT, Vicenza AB, IT (supporting Balkan operations) and are installing it in Riyadh, SA.

The Combat Intelligence System gives us the ability to perform mission planning, pass situational awareness data and transmit imagery. We are still working on expanding the imagery capabilities, but our current system is a substantial improvement over Desert Storm systems. We can receive real-time intelligence broadcasts, and we can connect to other sources and users world-wide. Finally, this system interfaces with not only other intelligence users, but also with squadron-level mission planning systems. In my view, our Combat Intelligence System is one of the post-Desert Storm success stories.

NATO AIRBORNE GROUND SURVEILLANCE INITIATIVE

Senator COHEN. General Anderson, how is the Army supporting the North Atlantic Treaty Organization's (NATO) Alliance Ground Surveillance initiative?

General ANDERSON. Dr. Perry's initiative is focused on providing a common airborne ground surveillance system to support NATO forces. The U.S. position is that the Joint Surveillance Target Attack Reconnaissance System (JSTARS), consisting of both an aircraft and a Ground Station Module (GSM), is the system of choice to meet the NATO Alliance Ground Surveillance requirement. The Army and Air Force are fully committed to the success of this project and are funding all demonstrations and projects from existing resources.

We participated in NATO exercise EUROSTAR 94 in October of last year in order to demonstrate the JSTARS systems to key NATO political and military leaders. We plan to provide a static display of the JSTARS aircraft and GSM at the Paris Air Show next month in order to gain increased support from our allies for a JSTARS solution to the NATO requirement. At the direction of the Secretary of Defense, the Army is providing a GSM to the SHAPE Technical Center to conduct a 3 year interoperability study. This study will ultimately define the configuration of a NATO GSM and a concept of operations for the NATO JSTARS systems.

OPTEMPO ON INTELLIGENCE AIRCRAFT AND CREWS

Senator COHEN. General Campbell, I have heard reports of the effects of high OPTEMPO on aircraft such as the RC-135. What is the Air Force doing to reduce the workload on these aircraft and crews?

General CAMPBELL. Air Force reconnaissance and intelligence forces are among the most heavily tasked in the U.S. military due to their tremendous value as intelligence collectors and force multipliers. Our AWACS and RC-135 crews, for example, are deployed (TDY) an average of well over 200 days per year. The AWACS and RC-135s accumulate flight time at a pace well out of proportion to other airframes. To reduce the problems related to this heavy use, we have withdrawn aircraft from forward deployment. This allows us to increase training sorties and thereby maintain all of our authorized crews in a mission ready status. We are carefully watching these airframes, and are cycling them through programmed depot maintenance (PDM) as required. We would like to acquire additional platforms, such as two more RC-135s, and update those we have. While there is a validated need to re-engine all models of our RC-135s, there is no funding available.

AIRBORNE RECONNAISSANCE—LOW AIRCRAFT

Senator COHEN. General Anderson, the Airborne Reconnaissance-Low (ARL) aircraft contributed significantly in Haiti. I did not see it mentioned in your architectures. Could you discuss its role and the means of getting its intelligence information to Commanders?

General ANDERSON. ARL did not appear in our architectures, as they addressed tactical echelons up to the Corps level, and AFL is an Echelon Above Corps system. It is assigned to an intelligence brigade that is focused on meeting power projection requirements and is made available for operations wherever required. AFL is especially suited to Military Operations Other Than War, as it has a non-military appearance and can accommodate local nationals on board for communications intelligence operations. As we showed in Haiti, AFL can relay its video imagery live to local commanders. Other imagery and signals intelligence processed on board is passed through secure tactical communications, and we will integrate the Commanders Tactical Terminal into AFL in fiscal year 1997. This will greatly enhance AFL data dissemination to all of the systems in which we are integrating Commander's Tactical Terminals, such as the All Source Analysis System, the Common Ground Station, the Advanced Field Artillery Tactical Distribution System, and Theater High Altitude Area Defense.

STRESS ON AIR FORCE RECONNAISSANCE, SURVEILLANCE AND INTELLIGENCE

Senator COHEN. General Campbell, I have heard about the stresses imposed on personnel deployed around the world. Has this impacted on Air Force reconnaissance, surveillance and intelligence forces?

General CAMPBELL. In a manner similar to the strain on aircrews, supporting on-the-ground requirements in such places as Southwest Asia and Aviano/Vincenza takes a tremendous toll on personnel in those theaters, to the extent that we must not only heavily task theater units, but must obtain augmentation from other units around the world. Individually, it is not uncommon for personnel in TIARA-funded support billets to be deployed for temporary duty in excess of 6 months per year. While we do manage high-quality support to on-going operations, in addition to the obvious strain on our people, we pay a price in reduced training time and other downstream costs.

TACTICAL SIGNALS INTELLIGENCE SYSTEMS

Senator COHEN. General Anderson, what advances will Ground Based Common Sensor and Advanced Quickfix give over the current generation of tactical Signals Intelligence systems?

General ANDERSON. These systems integrate leap-ahead technology to keep pace with the global communications revolution. Current systems detect and collect one threat signal at a time. Ground Based Common Sensor (GBCS) and Advanced Quickfix (AQF) can track over 70 frequency hopping nets simultaneously. Additionally, one GBCS has the same capability as having over 2,800 single channel receivers tuned to different frequencies. To state the capability another way: GBCS can process all active threat radios in the entire VHF band in the time a bullet fired from an M16A2 travels 3 inches.

GBCS expands frequency coverage and consolidates five single function Electronic Warfare platforms into one multifunctional (intercept, direction finding, and jamming) system. Typical savings are: 46 percent fewer operators, 65 percent fewer vehicles, 60 percent less airlift required to deploy the systems to a theater. AQF incorporates the same technology and interoperates with GBCS to extend intercept range and improve accuracy of this signals intelligence team.

The new systems also provide precision targeting and microsecond hand-off to Division Fire Support with direct data link to the Field Artillery Tactical Dissemination System, capabilities not available in the older generation of systems.

Both systems have an open architecture that allows system upgrades without new system starts. They are built to industry standards and use commercial information technologies so they can be quickly and inexpensively changed as the threat changes.

TACTICAL RECONNAISSANCE

Senator COHEN. General Campbell, what is the current Air Force position on tactical reconnaissance, and what types of systems are needed to accomplish tactical reconnaissance tasks?

General CAMPBELL. The Air Force is firmly committed to a capable, integrated airborne reconnaissance structure. Despite major resource challenges, the Air Force

Chief of Staff, General Ron Fogleman, has made it clear that airborne reconnaissance is a core Air Force mission area. Airborne reconnaissance systems provide invaluable support to warfighting Commanders in Chief and, in fact, have become even more prominent and useful in the information warfare age. We have renewed our commitment to the joint airborne reconnaissance effort. As you know, the Air Force has invested heavily in the Defense Airborne Reconnaissance Program.

The Air Force commitment to tactical airborne reconnaissance takes several forms. The first of these is to maintain and improve our existing "workhorse" reconnaissance systems—the RC-135 and the U-2. These aircraft are among the most heavily tasked in the Nation's inventory. Both platforms are heavily engaged in missions around the world, including Southwest Asia, the Adriatic region (including Bosnia) and Korea. Such sustained levels of activity are indicative of the great value they provide the supported Commanders in Chief. While we fully support developmental efforts of future platforms and sensors, the fact remains current tactical reconnaissance aircraft must continue to serve us at high operational rates well into the next century. We need to ensure we have the right numbers, that they are safely maintained, and that we upgrade them to keep up with the evolving potential threats.

We are also examining options for a new tactical reconnaissance capability. The need for and flexibility of manned tactical reconnaissance have been demonstrated repeatedly on the battlefield. The Air Force will temporarily lose that capability when the last squadron of RF-4Cs retires from the Air National Guard at the end of fiscal year 1995. We are currently examining options to sustain our tactical reconnaissance capability that include employing reconnaissance pods on existing tactical aircraft to satisfy this core Air Force mission requirement.

In the emerging arena of Unmanned Aerial Vehicle development, the Air Force strongly supports the Defense Airborne Reconnaissance Office's Unmanned Aerial Vehicle advanced concept technology demonstrations and is developing operations concepts for integration of this capability with our command and control, communications, computer, and intelligence systems, and force structure. The Air Force is well-postured to support this effort as the Nation's principle operator of airborne reconnaissance systems. Working with the Defense Airborne Reconnaissance Office, we have designated the Air Combat Command as the lead service component to support the Defense Airborne Reconnaissance Program's Medium- and High-Altitude Endurance Unmanned Aerial Vehicle demonstrations.

The Air Force is committed to our role as a key player on our Nation's reconnaissance team and will strive to ensure we as a nation achieve the required array of airborne reconnaissance capabilities.

REPLACEMENT OF TENCAP SYSTEMS

Senator COHEN. General Anderson, your chart depicting convergence of Tactical Intelligence and Related Activities (TIARA) systems shows one system replacing the current family of Tactical Exploitation of National Capabilities (TENCAP) systems. Could you discuss this consolidation and the status of the objective system?

General ANDERSON. The Tactical Exploitation System (TES) will combine the functionality of four large Corps-level systems that currently receive imagery and signals intelligence from national and joint sources. It is a prime example of our reducing both the number and size of intelligence systems while improving capabilities. The current concept envisions reducing from the six semitrailers and many support vehicles of the current four systems to a small set of deployable and interconnected workstations—mainly on High Mobility Multi-Wheeled Vehicles. The TES will still be a Corps and Echelons Above Corps system, and will pass processed national intelligence to the All Source Analysis System (ASAS) and the Common Ground Station (CGS). This availability of TENCAP intelligence in ASAS and the CGS will allow us to further reduce the number of separate systems on the battlefield by eliminating division-level Mobile Integrated Tactical Terminals and Forward Area Support Terminals. TES concept development will be completed this year and prototype development begins in fiscal year 1996.

GUARDRAIL COMMON SENSOR

Senator COHEN. General Anderson, your funding slide indicated that the current budget does not build complete Guardrail Common Sensor commonality. What shortfalls will exist and what problems do these shortfalls cause?

General ANDERSON. Each of the four Guardrail Common Sensor (GRCS) systems will have all intelligence collection capabilities: communications intelligence, electronic intelligence, and precision location. However, only two of four GRCS systems will have a capability for remoted operations. Of the two systems with remote, only

one will support rapid force projection with a direct aircraft to satellite capability. This shortfall results in increased fielding and deployment costs, both in time and dollars. Fielding is more costly due to the reshuffling of systems in order to retain the most capable system in the power projection Corps. Deployment is slower and more expensive as greater manpower and equipment must be deployed forward for the systems lacking remote capability.

The statement on the slide about commonality also refers to the fact that the four GRCS systems are not identical. The GRCS system is an evolutionary fielded system. System fieldings occur approximately 3 years apart and each generation embodies the technologies available at the time of production. As such, at any given time three generations of systems are in the field. To minimize operational impact, each system is designed to be backwards compatible with earlier Guardrail systems and, where technologically feasible, forward compatible. Additionally each system is upgradeable and program dollars have and continue to be programmed for this purpose. Technologies such as the Defense Airborne Reconnaissance Office's Joint Airborne Signals Intelligence (SIGINT) Architecture will be utilized when available and will facilitate joint standardization and interoperability. Upgrades are in-progress to the GRCS system in Korea to provide precision direction finding, joint interoperability, and Commander's Tactical Terminal to achieve commonality with the other current GRCS systems and to facilitate modern dissemination both within the Army and with our Joint and Coalition partners.

TASK FORCE XXI

Senator COHEN. General Anderson, what objective intelligence systems will be a part of the Army's Task Force warfighting experiment?

General ANDERSON. The current versions of the All Source Analysis System and Common Ground Station, as well as Unmanned Aerial Vehicle-Short Range, the Mobile Integrated Tactical Terminal, Trojan Spirit II, and the Integrated Meteorological System will have been fielded to units at Fort Hood in time for the Brigade-level experiment in fiscal year 1996. We will also have prototypes of the Ground-Based Common Sensor (both Light and Heavy) and of Advanced Quickfix for that exercise. We expect to have Unmanned Aerial Vehicle-Close Range prototypes available for the division level exercise in fiscal year 1997, and to have begun improvements to All Source Analysis System and the Common Ground Station by that time.

MOVEMENT OF SYSTEMS TO DEFENSE AIRBORNE RECONNAISSANCE OFFICE

Senator COHEN. General Anderson, last year, funding for Guardrail Common Sensor (GRCS) and Airborne Reconnaissance-Low (AFL) were moved by the Appropriations Conference Committee to the Defense Airborne Reconnaissance Program (DARP). Do you think that those programs should remain there permanently?

General ANDERSON. No. Although both the AFL and GRCS have application to the Joint Force Commander, they are primarily tactical systems. The Corps level GRCS system receives tasking from and primarily reports to the Land Component Commander. The AFL, initially designed for counter-narcotics, has grown to an excellent system supporting the ground maneuver commander in Military Operations Other Than War. Although each system maintains commonality and interoperability with joint systems, the requirements for the systems are primarily tactical and best articulated from within the Army.

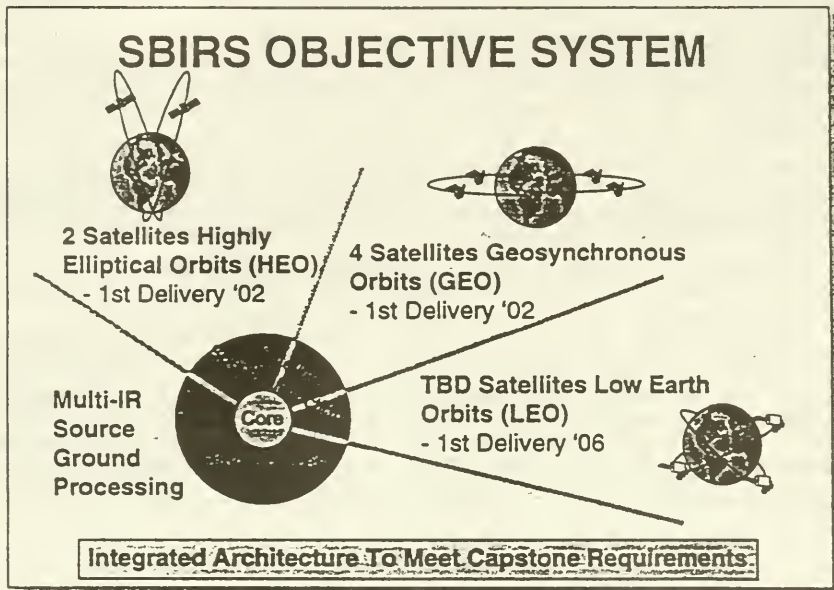
Additionally, both of these programs are mature, completing procurement of their final systems. Beyond fair share decrements each program has enjoyed great support both within the Army and in Office of the Secretary of Defense. The Deputy Secretary of Defense's decision to leave these programs in the Army underscores this point. Transfer of these programs to the DARP risks loss of support and visibility at both the Army and Joint Staff level. Thus far, the Defense Airborne Reconnaissance Office's efforts have been directed to high altitude and theater support systems. Requirements for the GRCS/AFL follow-on system, Aerial Common Sensor, would be a better candidate to move or develop from within the DARP. This is especially appropriate and relevant as the Joint Airborne Signals Intelligence Architecture is further defined and developed.

SPACE-BASED INFRARED SYSTEM (SBIRS) PROGRAM

Senator COHEN. General Campbell, because of the importance of the Space-Based Infrared System, would you please explain what the architecture will look like?

General CAMPBELL. The purpose is to develop a system that provides increased performance to meet the requirements in the U.S. Space Command (USSPACECOM) Capstone Requirements Document (CRD). The system's primary mission is to provide initial warning of a ballistic missile attack on the United

States, its deployed forces or allies. The Space-Based Infrared System (SBIRS) will incorporate new technologies that would enhance detection, provide direct reporting of ICBM/SLBM and tactical ballistic missile launches, and provide critical mid-course tracking and discrimination data for national and theater missile defense. The system will consist of sensors located in Geosynchronous Orbits (GEO), Highly Elliptical Orbits (HEO), Low Earth Orbits (LEO) and an integrated centralized ground station serving all space elements of the SBIRS system, as well as the Defense Support program (DSP).



Senator COHEN. General Campbell, what will the Low Earth Orbit (LEO) constellation provide that the Geosynchronous (GEO) and Highly Elliptical Orbits (HEO) will not?

General CAMPBELL. The Space-Based Infrared System (SBIRS) requirements are established in the USSPACECOM SBIRS Capstone Requirements Document. These requirements will be allocated to SBIRS "High" (GEO & HEO) and "Low" (LEO) components during the Pre-Engineering & Manufacturing Development (EMD) phase. The SBIRS "High" component will meet threshold requirements. Theater Missile Defense requirements uniquely suited to the LEO component, such as those requiring mid-course tracking, are documented as objective vice threshold requirements. The capability for mid-course tracking to support National Missile Defense are documented as threshold requirements. Mid-course tracking ability provides more accurate tracking of ballistic missile boosters (trajectory tracking in midcourse between booster burnout and re-entry) for improved Missile Defense. SBIRS also provides Technical Intelligence and Battle Space Characterization information. The LEO component provides this information for mid-course events. As the range of the theater threat increases, an over-the-horizon sensor system, such as this, becomes critical to meeting stringent warning and engagement requirements.

Senator COHEN. General Campbell, what does central processing of data provide that direct downlinks and theater processing will not, and vice versa?

General CAMPBELL. Centralized processing of the data will allow for fusion of additional data sources to improve the reliability and quality of warning information for the theater battle management system, at the price of a small (about 5 seconds or less) delay. An in-theater processor receiving direct down-link (DDL) would be under direct control of the theater commander. However, the DDL is only useful for satellites that are in line-of-sight (LOS) of the theater receive antenna. There can be circumstances where satellites providing coverage of the theater are not in LOS of the theater receive antenna potentially causing an incomplete capability to the theater commander.

From past experience on the Follow-on Early Warning System (FEWS), direct down-links can increase on-board processing requirements and cost. This possible method of data dissemination will be analyzed extensively over the next year during the Pre-EMD period to carefully weigh the system costs against military utility.

Senator COHEN. General Campbell, the Ballistic Missile Defense Organization (BMDO) participated in the joint Department of Defense and intelligence community review that produced the current Space-Based Infrared System (SBIRS) architecture. Does the Space-Based Infrared architecture you approved meet BMDO requirements for Theater Missile Defense as currently approved by the Secretary of Defense?

General CAMPBELL. Yes, the SBIRS meets all BMDO, and other organizations' Theater Missile Defense requirements. Theater Missile Defense requirements are established in the USSPACECOM SBIRS Capstone Requirements Document. The requirements listed as key parameters were validated by the Joint Requirements Oversight Council (JROC) on January 12, 1995. Requirements will be allocated to SBIRS "High" (GEO & HEO) and "Low" (LEO) components during the Pre-EMD phase. The SBIRS "High" component will meet threshold requirements. Mid-course tracking will be performed by the LEO system. The LEO system will provide capability to meet objective requirements through more accurate tracking of ballistic missile boosters (trajectory tracking in midcourse between booster burnout and re-entry).

Senator COHEN. General Campbell, if an expanded National Missile Defense program is funded by the Congress in fiscal year 1996, will the proposed Space Based Infrared System architecture support BMDO's requirements?

General CAMPBELL. Yes, the SBIRS will still meet all National Missile Defense requirements. These National Missile Defense requirements are established in the USSPACECOM SBIRS Capstone Requirements Document (CRD), which BMDO helped prepare. To meet BMDO requirements in the CRD however, requires a mid-course tracking capability which will only be provided by the Low Earth Orbit (LEO) constellation. Two Low Earth Orbit (LEO) technical flight demonstrations are planned in fiscal year 1999 to support a fiscal year 2000 LEO deployment decision leading to a 2006 launch. The deployment dates currently baselined may have to be adjusted if the National Missile Defense program is accelerated by Congress.

QUESTIONS SUBMITTED BY SENATOR CARL LEVIN

ARMY DIGITIZATION

Senator LEVIN. General Anderson, it seems to me that the concept of improving the sensor-to-shooter time line is an important subset of improving situational awareness. Is this the appropriate way to look at the contribution of tactical intelligence to prosecuting the war? I know that it has many other functions, but isn't the Army's digitization initiative just another means by which we can improve our sensor-to-shooter capability?

General ANDERSON. Improving the target acquisition aspects of situational awareness certainly includes improving the sensor-to-shooter time line. Other subsets in improving situational awareness are more capable sensors, better intelligence processors to quickly sort through and correlate the large volumes of information that the sensors collect regarding enemy forces, and rapid and accurate means to monitor the location, status, and activity of friendly forces.

It is appropriate to say that situation awareness through these sensor-to-shooter links is one contribution of tactical intelligence to warfighting. A complete look at the contribution of tactical intelligence in war would encompass all six intelligence tasks that I briefed earlier.

The answer to the second part of your question is no. Digitization is much, much more than a method to improve sensor-to-shooter capabilities. Improving that sensor-to-shooter timeline is only one small result of the digitization of the battlefield. Digitization will enhance the information capabilities of the systems and equipment already in the field and those being fielded to produce synergistic effects in equipment capability, performance, and overall combat power. Additionally, digitization will ensure Army systems can communicate seamlessly across the battlefield within the Army and jointly. As the Army moves from analog to digital systems we will begin to harness the power of the microprocessor—the power not only to move massive amounts of data, but, more importantly, to communicate concepts and battlefield awareness across the entire Army.

Our tactical units will use information-age technology to enable us to maneuver faster and mass fires more effectively. Individual weapon systems will be more po-

tent. Digitization of the battlefield will allow commanders to synchronize all elements of combat power with devastating effect. Shared situational awareness, with every soldier knowing where he is and where his comrades are, will improve our command and control on the move and decrease the potential for fratricide as it increases our operational tempo. The sensor-to-shooter timelines will be significantly enhanced through the rapid passing of situational awareness data. Tactical units organized and trained to exploit information-age technology will be more agile, more versatile, more efficient, and much more deadly.

Digitization is the application of information technologies to acquire, exchange, and employ timely digital information throughout the battlespace, tailored to the needs of each decision maker (warfighting commander), shooter, and supporter, thus allowing each to maintain a clear and accurate vision of his battlespace necessary to support planning and execution.

RECONNAISSANCE SYSTEMS

Senator LEVIN. General Campbell, I note that your charts refer to an F-16R reconnaissance pod. I know that General McPeak canceled the Follow-on Tactical Reconnaissance System (FOTRS) because of cost and technical difficulties. I also understand that the Marine Corps has been having good results with the ATARS program that we directed them to undertake 2 years ago. What is the relationship between this F-16R program and the ATARS program that the Marine Corps has been continuing?

General CAMPBELL. Senator, the earlier version of my charts delivered to your committee referring to the F-16R were incorrect. They should not refer to the F-16R, but should correctly refer to the general purpose F-15 and F-16 platforms being used to evaluate candidate pods for reconnaissance sensor systems. The F-16R was a specialized reconnaissance aircraft that was being considered as a platform for the Follow-on Tactical Reconnaissance System. When the FOTRS program was canceled, plans to acquire the F-16R were also canceled. The Air Force is currently examining options to acquire a follow-on manned tactical reconnaissance capability that would employ podded sensor systems on general purpose fighter aircraft. While the F-16 is just one general purpose fighter aircraft being considered as a platform for podded sensor systems, we have no plans to introduce a new specialized fighter reconnaissance aircraft, such as the F-16R to which you refer. We are monitoring the progress of the Marine Corps ATARS program, and we are considering an option to employ the ATARS sensors in a podded configuration.

Senator LEVIN. General Campbell, has there been a fundamental reevaluation within the Air Force of the need for manned reconnaissance systems?

General CAMPBELL. Yes, not only is the Air Force rethinking tactical reconnaissance; we are reaffirming it as a core Air Force mission area. The Chief of Staff of the Air Force has expressed unequivocal support for USAF tactical reconnaissance, and we are seriously pursuing the best ways to maintain and improve USAF tactical reconnaissance capabilities.

RIVET JOINT 15/16

Senator LEVIN. General Campbell, two years ago, the Defense Authorization Act directed DOD to pursue a joint airborne [deleted] intelligence aircraft architecture as a way of improving our ability to make incremental improvements in the Air Force's Rivet Joint (RC-135) [deleted] the Navy's EP-3, and the Army's Guardrail systems.

Your briefing charts refer to Rivet Joint 15/16, which I presume indicates an Air Force intention to outfit two additional B-707 airframes with Rivet Joint capability. Is it the Air Force's intent to outfit these aircraft with the current Rivet Joint systems, or are you planning to make upgrades that are compatible with the new Joint Architecture at the same time?

General CAMPBELL. If funding becomes available, the Air Force would build two additional Rivet Joint platforms using partial sensor kits and C-135 aircraft currently available. Both aircraft could be delivered within 2 years after the order is placed. These Rivet Joint platforms would be built to the defined [deleted] standards to the maximum extent possible, consistent with available funding and technology. These two additional aircraft, as well as the rest of the fleet, will be incrementally upgraded to full [deleted] compliance as funding and technology become available. We believe many of the current Rivet Joint systems are [deleted] compliant now; however, [deleted] standards are still being defined.



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HIGH ALTITUDE UNMANNED AERIAL VEHICLE

Senator LEVIN. General Anderson and General Campbell, the Defense Airborne Reconnaissance Office (DARO) is responsible for managing acquisition of the high altitude endurance unmanned aerial vehicles (UAV). What contribution do you believe such a vehicle could make to the joint forces commander on the battlefield? What do you believe are the capabilities that such a vehicle requires in order to make an effective contribution to situational awareness on the theater level?

General ANDERSON. The Army fully supports a complete family of UAVs: Close Range to support maneuver brigades, Short Range to support corps and divisions, and Endurance UAV to support joint forces commanders and component commanders at echelons above corps. Each has a unique yet complementary role.

High Altitude Endurance (HAE) UAV's primary contribution will be to provide long dwell intelligence gathering capabilities prior to commitment of actual forces. HAE's contributions to tactical commanders are limited since it cannot be dynamically retasked by commanders and does not have direct connectivity to provide near real time usable intelligence to commanders at Corps and below. Tactical UAVs are required to meet commanders' requirements for responsive and timely target acquisition, force protection, and immediate battle damage assessment.

HAE needs intelligence sensor capabilities to support the long dwell pre-hostilities requirements. With integration of a communications data relay capability, HAE can also meet ground component requirements for a surrogate communications satellite capability to correct deficiencies identified in Desert Storm and most recently in Haiti.

General CAMPBELL. The long dwell and broad area coverage capability of UAVs offer the potential to provide the joint force commander responsive, continuous, and nearly synoptic situational awareness. With this kind of situational awareness, a high fidelity, near real time virtual representation of the battlespace could be generated, providing the joint force commander, joint force air component commander (JFACC), and other commanders a capability to quickly adapt to the air land, and sea battle based on surveillance of the battlefield instead of periodic reconnaissance. The broad area coverage provided by unmanned aerial vehicles could also allow the commander flexibility to employ other theater surveillance and reconnaissance assets to focus on specific targets. UAVs could also provide the commander an alternative to sending manned sensor platforms into high threat environments. However, some key issues remain before this potential can be realized. First, operational control of High-Altitude Endurance UAVs must belong to the joint force commander with tasking through the joint force air component commander. Second, the rules of engagement (ROE) for the HAE UAVs must support cross-border operations when surveillance is most needed, to include the period prior to conflict and at the very onset of conflict.

In addition to long dwell and broad area coverage capability HAE UAVs must be able to operate and survive in a hostile air defense environment while still being affordable enough to allow the procurement of the force structure necessary to meet the emerging surveillance requirements. The links between the UAV and the control and processing facilities need to be jam-resistant. The UAV platform and its sensors need to be responsive to the users. The user must be able to task the UAV; the UAV must be able to reach the target area; and the information gathered by the UAV sensors must be processed and transferred to intelligence users, the commander, and weapons platforms—all in a timely manner. However, some key issues remain before the potential of HAE UAVs can be realized. First, operational control of High-Altitude Endurance UAVs must belong to the joint force commander with tasking through the joint force air component commander. Second, the rules of engagement (ROE) for the HAE UAVs must support cross-border operations when surveillance is most needed, to include the period prior to conflict and at the very onset of conflict.

The results of the HAE UAV advanced concept technology demonstration (ACTD) program will help define the variables and considerations related to employing these vehicles to meet this next generation situational awareness requirement. Our assessment of the ACTD information will, I believe, lead to refined and detailed requirements and to a well-planned acquisition program. The ACTD will allow valuable insight into the reality of HAE UAV cost and performance, and support an assessment of which requirements these vehicles can actually satisfy in support of the joint force commander.

[Whereupon, at 4:27 p.m., the hearing was adjourned.]

